**BUREAU OF INDIAN STANDARDS**
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**Doc: PGD 37 (25240) WC**
**August 2024**

*भारतीय मानक मसौदा*

# सेल्फ टैपिंग पेंच – विशिष्टि

(IS 18480 *का पहला पुनरीक्षण*)

*Draft Indian Standard*

# Self-Tapping Screws — Specification

(*First Revision of* IS 18480)

ICS 61.040; 83.140.01

| | |
|---|---|
| General Engineering and Fasteners Standards Sectional Committee, PGD 37 | Last date for receipt of comment is |

FOREWORD

(*Formal clause will be added later*)

The committee responsible for the formulation of this standard has decided to merge the following IS standards:

IS 18480 (Part 1) : 2023 Cross recessed tapping screws Part 1 Pan head
IS 18480 (Part 2) : 2023 Cross recessed tapping screws Part 2 Countersunk flat head
IS 18480 (Part 3) : 2023 Cross recessed tapping screw Part 3 Raised countersunk oval head

In this first revision, the requirements of slotted head tapping screws which were earlier covered under the following Indian Standards have also been added:

IS 7169 : 2018 Slotted raised countersunk (Oval) head tapping screws (*second revision*)
IS 7170 : 2018 Slotted countersunk (Flat) head tapping screws (*second revision*)
IS 7173 : 2018 Slotted pan head tapping screws (*second revision*)

Along with it, the requirements of other varieties of self-tapping screws like hexalobular head, hexagon head, brazing head etc. have also been added.

Self-tapping screws are produced with various head shapes and types of self-tapping threads. The committee has tried to include all the major shapes and thread types commonly manufactured in the industry in the standard. However, to encourage innovation, and to suit certain specific requirements, the committee has chosen to leave the dimensional parameters (*see* **3**) to be mutually agreed upon by the user and the manufacturer. Nonetheless, the standard outlines specific tests that are mandatory to verify the self-tapping capabilities of these screws.

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In the formulation of this standard, assistance has been taken from the following International Standards:

| | |
|---|---|
| ISO 7049 : 2011 | Cross-recessed pan head tapping screws |
| ISO 7050 : 2011 | Cross-recessed countersunk (flat) head tapping screws |
| ISO 7051 : 2011 | Cross-recessed raised countersunk (oval) head tapping screws |
| ISO 7053: 2019 | Fasteners — Hexagon washer head tapping screws |
| ISO 10509 : 2012 | Hexagon flange head tapping screws |
| ISO 1479 : 2011 | Hexagon head tapping screws |
| ISO 1481 : 2011 | Slotted pan head tapping screws |
| ISO 1482 : 2011 | Slotted countersunk (flat) head tapping screws |
| ISO 1483 : 2011 | Slotted raised countersunk (oval) head tapping screws |
| ISO 14585 : 2011 | Hexalobular socket pan head tapping screws |
| ISO 14586 : 2011 | Hexalobular socket countersunk head tapping screws |
| ISO 14587 : 2011 | Hexalobular socket raised countersunk (oval) head tapping screws |
| ISO 15480 : 2019 | Fasteners — Hexagon washer head drilling screws with tapping screw thread |
| JIS B 1122 : 1996 | Cross recessed head tapping screws |

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## 1 SCOPE

This standard specifies the requirements of self-tapping screws.

## 2 REFERENCES

| *IS No.* | *Tittle* |
|---|---|
| IS 8536 : 2021/ ISO 225 : 2010 | Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions (*second revision)* |
| IS 5957 : 2003/ ISO 1478 : 1999 | Screw threads for thread forming tapping screws dimensions (*second revision*) |
| IS 7178 : 2018/ ISO 2702 : 2011 | Heat treated steel tapping screws — Mechanical properties (*fourth revision*) |
| IS 1367 (Part 17) : 2023/ ISO 3269 : 2019 | Technical supply conditions for threaded steel fasteners: Part 17 Inspections, sampling and acceptance procedure (*fifth revision*) |
| IS 1367 (Part 14/Sec 4) : 2023/ ISO 3506-4 : 2009 | Technical supply conditions for threaded steel fasteners: Part 14 Mechanical properties of corrosion resistant stainless-steel fasteners, Section 4 Tapping screw |
| IS 1367 (Part 11) : 2020/ ISO 4042 : 2018 | Technical supply conditions for threaded steel fasteners: Part 11 Electroplated coating systems (*fourth revision*) |
| IS 7478 : 2011/ ISO 4757 : 1983 | Cross recesses for screws (*second revision*) |
| IS 1367 (Part 2) : 2002/ ISO 4759-1 : 2000 | Technical supply conditions for threaded steel fasteners: Part 2 Tolerances for fasteners — Bolts, screws, studs and nuts — Product grades A, B and C (*third revision*) |
| IS 1367 (Part 1) : 2014/ ISO 8992 : 2005 | IS 1367 (Part 1) : 2014/ISO 8992 : 2005 Technical supply conditions for threaded steel fasteners: Part 1 General requirements for bolts, screws, studs and nuts (*fourth revision)* |
| IS/ISO 10683 : 2018 | Fasteners — Non-electrolytically applied zinc flake coating systems |
| PGD/37/25507 ISO 10666 : 1999 | Drilling screws with tapping screw thread — Mechanical and functional properties |

## 3 DIMENSIONS

**3.1** Unless otherwise agreed to between the user and the manufacturer, the dimensions of the tapping screws shall be as given in Table 1.

**3.2** For self-tapping screws with the shapes specified in Table 1 and with integrated/captive washers (*see* Fig.1); the dimensions and other properties of the washer shall be mutually agreed upon between the user/purchaser and the manufacturer.

**3.3** The dimensions and tolerances of self-tapping screws with the shapes other than those mentioned in Table 1 shall be agreed between the user and the manufacturer. In such cases, the complete drawing of the screw shall be

## 4 GENERAL REQUIREMENTS

The general requirements of self-tapping screws shall be in accordance with IS 1367 (Part 1).

## 5 DRIVE

**5.1** The dimensions of cross recess (wherever applicable) shall be in accordance with IS 7478.

**5.2** The dimensions of hexalobular socket (wherever applicable) shall be in accordance with ISO 10664.

## 6 MECHANICAL PROPERTIES

**6.1** Self tapping screws made up of steel shall conform to all the requirements as per IS 7178.

**6.2** Self tapping stainless steel screws shall be of property class A2-20H or A4-20H or A5-20H in accordance with IS 1367 (Part 14/Sec 4).

## 7 THREADS

Unless otherwise agreed between the user and the manufacturer, the dimensions of threads shall be in accordance with IS 5957.

## 8 TOLERANCES

Unless otherwise specified, self-tapping screws shall conform to product grade A in accordance with IS 1367 (Part 2).

## 9 FINISH

**9.1** Self tapping screws made up of steel shall either be electroplated in accordance with IS 1367 (Part 11) or non-electrolytically zinc flake coated in accordance with IS/ISO 10683. The requirements of any additional coatings or finish shall be agreed between the user/purchaser and the manufacturer.

**9.2** Self tapping screws made up of stainless steel can be supplied clean and bright condition. If passivation is done, it shall be in accordance with ISO 16048.

## 10 DESIGNATION

Self-tapping screws shall be designated by the thread size, nominal length, type of material, type of drive (wherever applicable) and type of thread end (wherever applicable).

*Examples:*

a) A cross-recessed pan head tapping screw with thread size ST 3.5, nominal length $l$ = 16 mm, made of steel (St), rounded end (Type R) and cross recess Type Z is designated as follows:

Tapping screw IS 18480 — ST 3.5 × 16 — St — Z — R

b) A cross-recessed pan head tapping screw with thread size ST 3.5, nominal length *l* = 16 mm, made of stainless steel (A4-20H), rounded end (Type R) and cross recess Type H is designated as follows:

Tapping screw ISO 7049 — ST 3.5 × 16 — A4-20H — R — H

## 11 MARKING

**11.1** The following shall be marked on the package:

a) Designation;
b) Batch/lot number; and
c) manufacturers

### 11.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark.

## 12 SAMPLING AND ACCEPTANCE PROCEDURE

The sampling and acceptance procedure shall be in accordance with IS 1367 (Part 17).

**Table 1 Dimensions**

| Sl No. | Type of Screw | Dimensions |
|---|---|---|
| (1) | (2) | (3) |
| Cross Recessed Screws: | | |
| i) | Pan Head | *see* Fig. 1 and Table 2 |
| iii) | Countersunk head | *see* Fig. 1 and Table 3 |
| iii) | Raised countersunk head | *see* Fig.1 and Table 4 |
| iv) | Truss head | *see* Fig. 2 and Table 5 |
| v) | Binding head | *see* Fig. 2 and Table 6 |
| vi) | Brazier head | *see* Fig. 2 and Table 7 |
| Slotted Screws: | | |
| vii) | Pan Head | *see* Fig. 3 and Table 8 |
| viii) | Countersunk head | *see* Fig. 3 and Table 9 |
| ix) | Raised countersunk head | *see* Fig. 3 and Table 10 |
| Hexalobular/Torx/Star Socket Screws: | | |
| x) | Pan head | *see* Fig. 4 and Table 11 |
| xi) | Countersunk head | *see* Fig. 4 and Table 12 |
| xii) | Raised countersunk head | *see* Fig. 4 and Table 13 |
| Hexagon Head Screws: | | |
| xiii) | Hexagon head | *see* Fig. 5 and Table 14 |
| xiv) | Hexagon washer head | *see* Fig. 5 and Table 15 |
| xv) | Hexagon flange head | *see* Fig. 5 and Table 16 |

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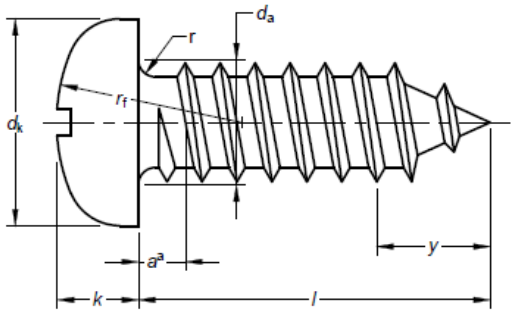


**Fig. 1(B) Pan Head (Type C End)**

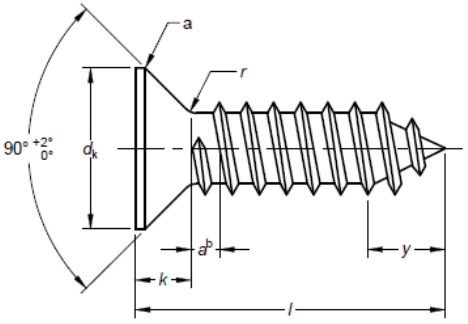


**Fig. 1(B) Countersunk Head (Type C End)**

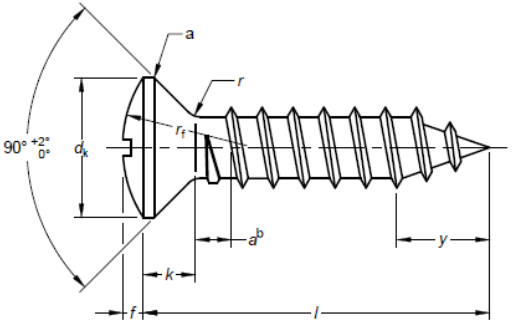


**Fig. 1(C) Raised CSK Head (Type C End)**

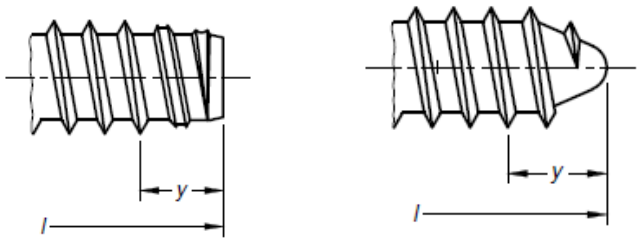


**Fig. 1(D) Type F and Type R Ends**

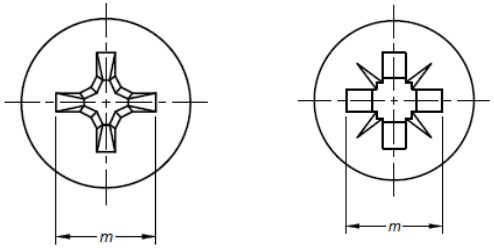


**Fig. 1(E) Type H and Type Z Cross Recess**

**Fig. 1 Cross Recessed Screws (Pan head, Countersunk Head and Raised Countersunk Head)**

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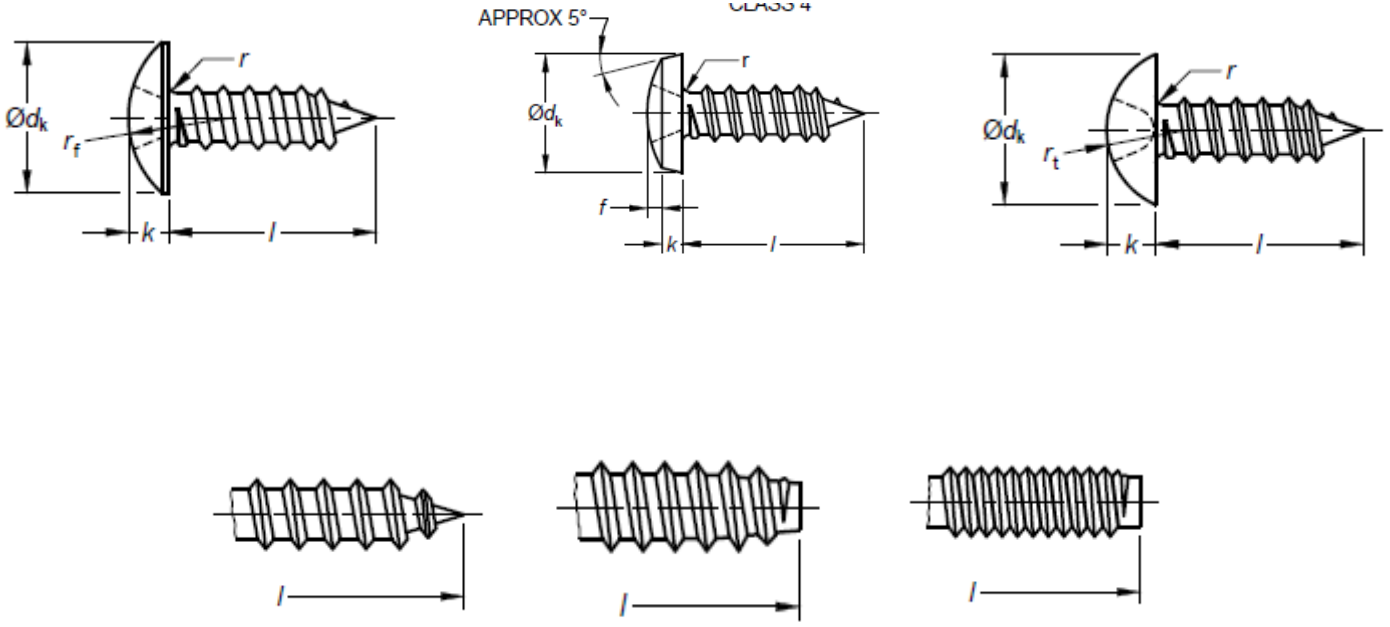

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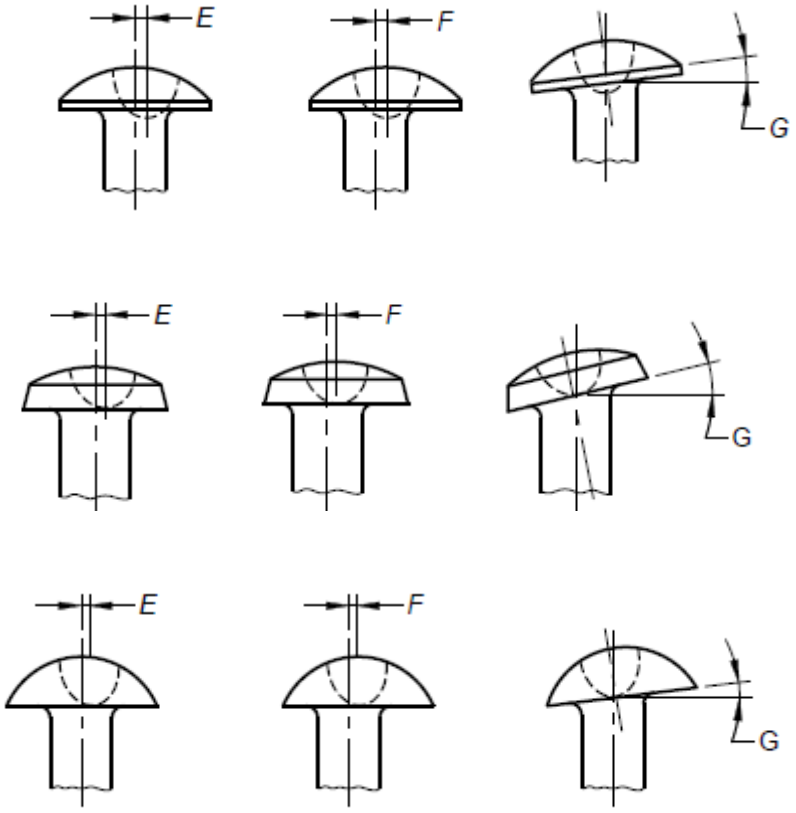

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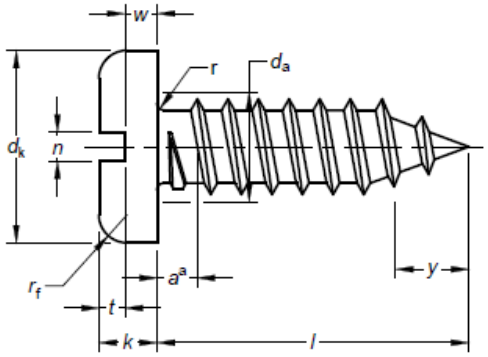


**Fig. 1(B) Pan Head (Type C End)**

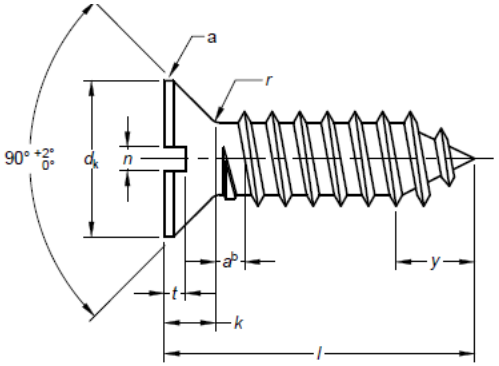


**Fig. 1(B) Countersunk Head (Type C End)**

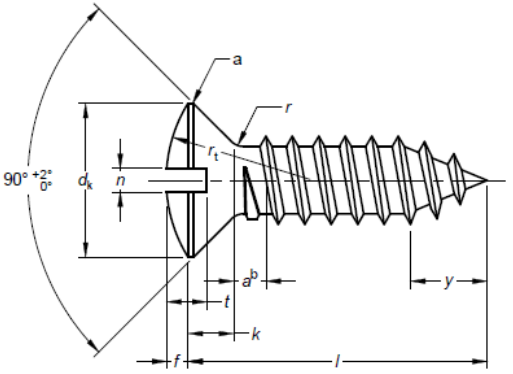


**Fig. 1(C) Raised CSK Head (Type C End)**

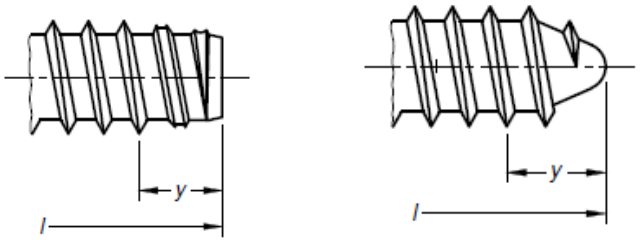


**Fig. 1(D) Type F and Type R Ends**

**Fig. 1 Cross Recessed Screws (Pan head, Countersunk Head and Raised Countersunk Head)**

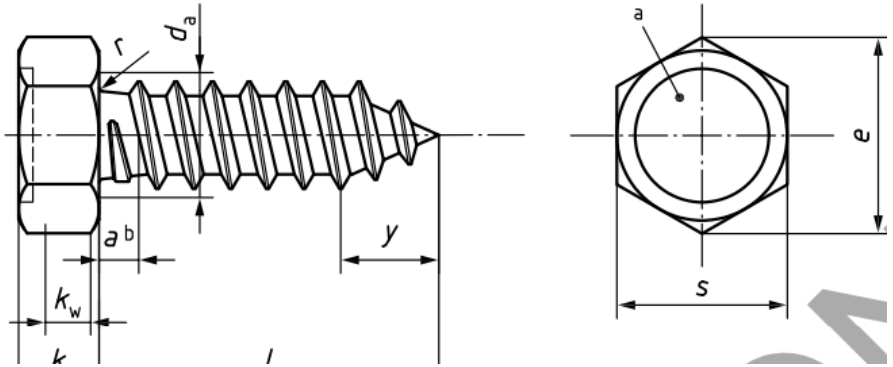


**Fig. 1(B) Hexagon Head (Type C End)**

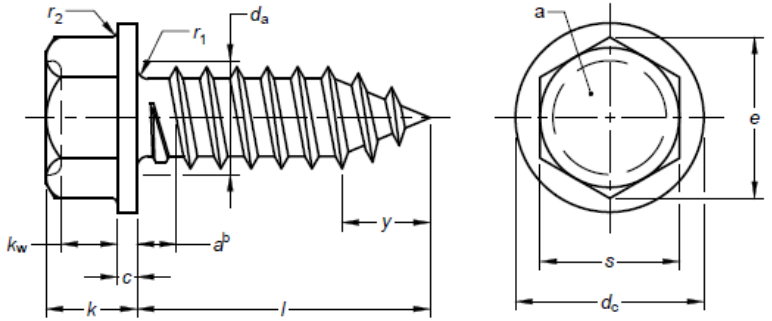


**Fig. 1(B) Hexagon Washer Head (Type C End)**

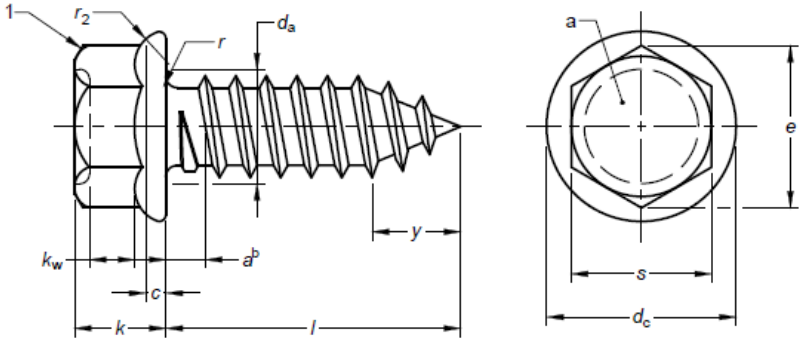


**Fig. 1(C) Hexagon Flange Head (Type C End)**

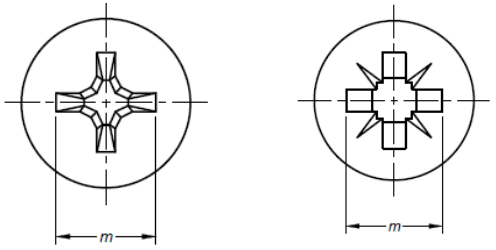


**Fig. 1(E) Type H and Type Z Cross Recess**

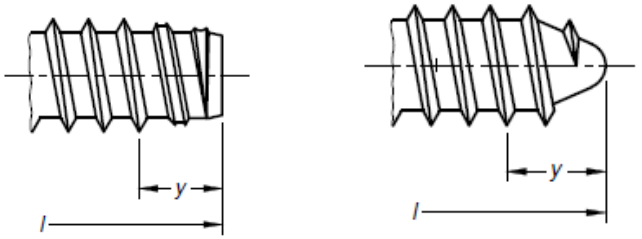


**Fig. 1(D) Type F and Type R Ends**

**Fig. 1 Cross Recessed Hexagon Head Screws (Common, Washer Head and Flange Head)**

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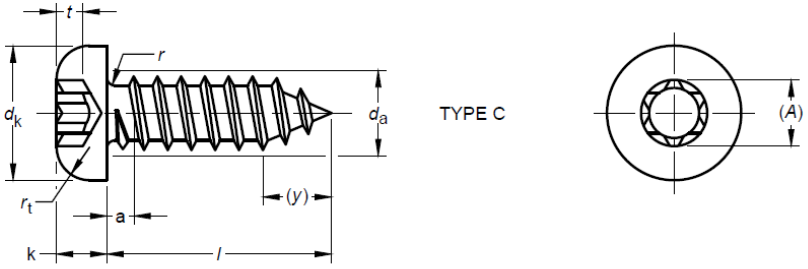


**Fig. 1(B) Pan Head (Type C End)**

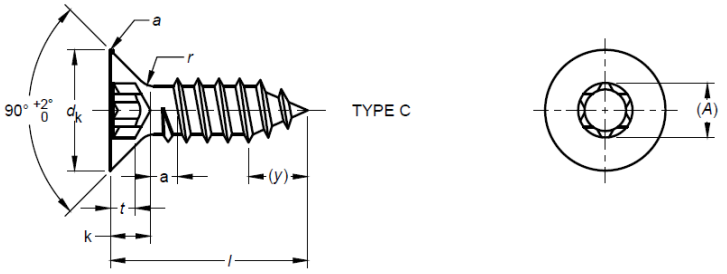


**Fig. 1(B) Countersunk Head (Type C End)**

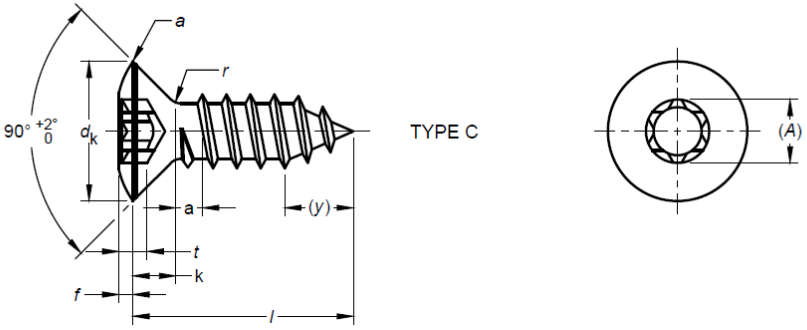


**Fig. 1(C) Raised CSK Head (Type C End)**

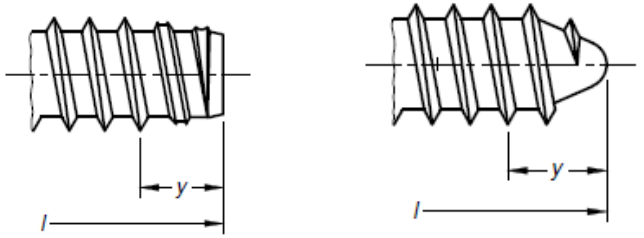


**Fig. 1(D) Type F and Type R End**

**Fig. 1 Hexalobular Socket Screws (Pan head, Countersunk Head and Raised Countersunk Head)**

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**Table 1 Dimension of Cross Recessed Pan Head Screws**
(*Clause* 3)

All dimensions in millimeters.

| **Thread size** | | | | **ST 2.2** | **ST 2.9** | **ST 3.5** | **ST 4.2** | **ST 4.8** | **ST 5.5** | **ST 6.3** | **ST 8** | **ST9.5** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *P*[1)] | | | | 0.8 | 1.1 | 1.3 | 1. | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| *a, Max* | | | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| $d_a$, *Max* | | | | 2.8 | 3.5 | 4.1 | 4.9 | 5.6 | 6.3 | 7.3 | 9.2 | 10.7 |
| $d_k$ | *Max* | | | 4.00 | 5.60 | 7.00 | 8.00 | 9.50 | 11.00 | 12.00 | 16.00 | 20.00 |
| | *Min* | | | 3.70 | 5.30 | 6.64 | 7.64 | 9.14 | 10.57 | 11.57 | 15.57 | 19.48 |
| *k* | *M*ax | | | 1.60 | 2.40 | 2.60 | 3.10 | 3.70 | 4.00 | 4.60 | 6.00 | 7.50 |
| | *M*in | | | 1.40 | 2.15 | 2.35 | 2.80 | 3.40 | 3.70 | 4.30 | 5.60 | 7.10 |
| *r, Min* | | | | 0.10 | 0.10 | 0.10 | 0.20 | 0.20 | 0.25 | 0.25 | 0.40 | 0.40 |
| $r_f$ | ≈ | | | 3.2 | 5.0 | 6.0 | 6.5 | 8.0 | 9.0 | 10.0 | 13.0 | 16,0 |
| Cross recess | Recess No | | | 0 | 1 | 2 | | | 3 | | 4 | |
| | Type H | *m* ref. | | 1.9 | 3.0 | 3.9 | 4.4 | 4.9 | 6.4 | 6.9 | 9.0 | 10.1 |
| | | Penetration | *Max* | 1.20 | 1.80 | 1.90 | 2.40 | 2.90 | 3.10 | 3.60 | 4.70 | 5.80 |
| | | | *Min* | 0.85 | 1.40 | 1.40 | 1.90 | 2.40 | 2.60 | 3.10 | 4.15 | 5.20 |
| | Type Z | *m* ref. | | 2.0 | 3.0 | 4.0 | 4.4 | 4.8 | 6.2 | 6.8 | 8.9 | 10,1 |
| | | Penetration | *Max* | 1.20 | 1.75 | 1.90 | 2.35 | 2.75 | 3.00 | 3.50 | 4.50 | 5,70 |
| | | | *Min* | 0.95 | 1.45 | 1.50 | 1.95 | 2.30 | 2.55 | 3.05 | 4.05 | 5,25 |

| *y* ref. | | | Type C | 2.0 | 2.6 | 3.2 | 3.7 | 4.3 | 5.0 | 6.0 | 7.5 | 8,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Type F | 1.6 | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 | 4.2 | 4,2 |
| | | | Type R | — | — | 2.7 | 3.2 | 3.6 | 4.3 | 5.0 | 6.3 | — |
| | *l*[2] Type C and Type R | | Type F | | | | | | | | | |
| *Nom* | *Min* | *Max* | *Min* | *Max* | | | | | | | | |
| 4.5 | 3.7 | 5.3 | 3.7 | 4.5 | | | | | | | | |
| 6.5 | 5.7 | 7.3 | 5.7 | 6.5 | | | | | | | | |
| 9.5 | 8.7 | 10.3 | 8.7 | 9.5 | | | | | | | | |
| 13 | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | | | |
| 16 | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | | | |
| 19 | 18.2 | 19.8 | 18.2 | 19.0 | | | Range of preferred length | | | | | |
| 22 | 21.2 | 22.8 | 20.7 | 22.0 | | | | | | | | |
| 25 | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | | | |
| 32 | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | | | |
| 38 | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | | | |
| 45 | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | | | |
| 50 | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | | | |

[1] *P* = pitch of the thread.

[2] Sizes with lengths marked with a dash (—) cannot be manufactured.

For length of the screws greater than 50 mm, the tolerances shall in accordance with product grade A of IS

**Table 2 Dimensions of Cross Recessed Countersunk (Flat) Head Screws**
(*Clause* 3)

All dimensions in millimeters

| **Thread size** | | | | **ST 2.2** | **ST 2.9** | **ST 3.5** | **ST 4.2** | **ST 4.8** | **ST 5.5** | **ST 6.3** | **ST 8** | **ST 9.5** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *P*[1)] | | | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| *a,Max.* | | | | 1.6 | 1.2 | 2.6 | 2.8 | 3.2 | 3.6 | 3.6 | 4.1 | 4.2 |
| $d_k$ | Theoretical[2)] | | *Max* | 4.4 | 6.3 | 8.2 | 9.4 | 10.4 | 11.5 | 12.6 | 17.3 | 20.0 |
| | Actual | | *Max* | 3.8 | 5.5 | 7.3 | 8.4 | 9.3 | 10.3 | 11.3 | 15.8 | 18.3 |
| | | | *Min* | 3.5 | 5.2 | 6.9 | 8.0 | 8.9 | 9.9 | 10.9 | 15.4 | 17.8 |
| *k,, Max* | | | | 1.10 | 1.70 | 2.35 | 2.60 | 2.80 | 3.00 | 3.15 | 4.65 | 5.25 |
| *r, Max* | | | | 0.8 | 1.2 | 1.4 | 1.6 | 2.0 | 2.2 | 2.4 | 3.2 | 4.0 |
| Cross recess Series 1(deep) | Recess No | | | 0 | 1 | 2 | | | 3 | | 4 | |
| | *m* ref. | | | 1.9 | 3.2 | 4.4 | 4.6 | 5.2 | 6.6 | 6.8 | 8.9 | 10.0 |
| | Type H | Penetration | *Max* | 1.2 | 2.1 | 2.4 | 2.6 | 3.2 | 3.3 | 3.5 | 4.6 | 5.7 |
| | | | *Min* | 0.9 | 1.7 | 1.9 | 2.1 | 2.7 | 2.8 | 3.0 | 4.0 | 5.1 |
| | *m* ref. | | | 2.0 | 3.0 | 4.1 | 4.4 | 4.9 | 6.3 | 6.6 | 8.8 | 9.8 |
| | Type Z | Penetration | *Max* | 1.20 | 2.01 | 2.20 | 2.51 | 3.05 | 3.18 | 3.45 | 4.60 | 5.64 |
| | | | *Min* | 0.95 | 1.76 | 1.75 | 2.06 | 2.60 | 2.73 | 3.00 | 4.15 | 5.19 |
| *y* ref. | Type C | | | 2.0 | 2.6 | 3.2 | 3.7 | 4.3 | 5.0 | 6.0 | 7.5 | 8.0 |

| | Type F | | | | 1.6 | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 | 4.2 | 4.2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type R | | | | — | — | 2.7 | 3.2 | 3.6 | 4.3 | 5.0 | 6.3 | — |
| | $l^{3)}$ Type C and Type R | | Type F | | | | | | | | | | |
| *Nom* | *Min* | *Max* | *Min* | *Max* | | | | | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | | | | | | | | | |
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | | | | | | | | |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | | | | | |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | | | | |
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | | | | |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | Range of preferred length | | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | | | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | | | | |

[1)] $P$ = pitch of the thread.

[2)] In accordance with ISO 7721

[3)] Sizes with lengths marked with a dash (—) cannot be manufactured.

**Doc: PGD 37 (25240) WC**
**August 2024**

**Table 3 Dimensions of Cross Recessed Raised Countersunk (Oval) Head Screws**
(*Clause* 3)

All dimensions in millimeters.

| **Thread size** | | | | **ST 2.2** | **ST 2.9** | **ST 3.5** | **ST 4.2** | **ST 4.8** | **ST 5.5** | **ST 6.3** | **ST 8** | **ST 9.5** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *P*[1)] | | | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| *a, Max* | | | | 1.6 | 1.2 | 2.6 | 2.8 | 3.2 | 3.6 | 3.6 | 4.1 | 4.2 |
| $d_k$ | Theoretical[2)] | | *Max* | 4.4 | 6.3 | 8.2 | 9.4 | 10.4 | 11.5 | 12.6 | 17.3 | 20.0 |
| | Actual | | *Max* | 3.8 | 5.5 | 7.3 | 8.4 | 9.3 | 10.3 | 11.3 | 15.8 | 18.3 |
| | | | *Min* | 3.5 | 5.2 | 6.9 | 8.0 | 8.9 | 9.9 | 10.9 | 15.4 | 17.8 |
| *f* | | | ≈ | 0.5 | 0.7 | 0.8 | 1.0 | 1.2 | 1.3 | 1.4 | 2.0 | 2.3 |
| *k, Max* | | | | 1.10 | 1.70 | 2.35 | 2.60 | 2.80 | 3.00 | 3.15 | 4.65 | 5.25 |
| *r, Max* | | | | 0.8 | 1.2 | 1.4 | 1.6 | 2.0 | 2.2 | 2.4 | 3.2 | 4.0 |
| $r_f$ | | | ≈ | 4.0 | 6.0 | 8.5 | 9.5 | 9.5 | 11.0 | 12.0 | 16.5 | 19.5 |
| Cross recess | Recess No | | | 0 | 1 | 2 | | | 3 | | 4 | |
| | *m* ref. | | | 1.9 | 3.2 | 4.4 | 4.6 | 5.2 | 6.6 | 6.8 | 8.9 | 10.0 |
| | Type H | Penetration | *Max* | 1.2 | 2.1 | 2.4 | 2.6 | 3.2 | 3.3 | 3.5 | 4.6 | 5.7 |
| | | | *Min* | 0.9 | 1.7 | 1.9 | 2.1 | 2.7 | 2.8 | 3.0 | 4.0 | 5.1 |
| | *m* ref. | | | 2.0 | 3.0 | 4.1 | 4.4 | 4.9 | 6.3 | 6.6 | 8.8 | 9.8 |
| | Type Z | Penetration | *Max* | 1.20 | 2.01 | 2.20 | 2.51 | 3.05 | 3.18 | 3.45 | 4.60 | 5.64 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | *Min* | 0.95 | 1.76 | 1.75 | 2.06 | 2.60 | 2.73 | 3.00 | 4.15 | 5.19 |
| *y* ref. | Type C | | | 2.0 | 2.6 | 3.2 | 3.7 | 4.3 | 5.0 | 6.0 | 7.5 | 8.0 |
| | Type F | | | 1.6 | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 | 4.2 | 4.2 |
| | Type R | | | — | — | 2.7 | 3.2 | 3.6 | 4.3 | 5.0 | 6.3 | — |
| | *l*[3)] Type C and Type R | | Type F | | | | | | | | | |
| *Nom.* | *Min.* | *Max.* | *Min.* | *Max.* | | | | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | | | | | | | | |
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | | | | | | | |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | | | | |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | | | |
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | | | |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | Range of preferred length | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | | | |

[1] $P$ = pitch of the thread.

[2] In accordance with ISO 7721

[3] Sizes with lengths marked with a dash (—) cannot be manufactured.

## Table Truss head tapping Screws

(*Clause 3*)

All dimension in millimeters

| **Nominal diameter of threads** | | | | **2**[6] | **2.5**[6] | **3** | **3.5** | **4** | **4.5** | **5** | **6** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $d_k$ | | | Basic Size | 4.5 | 5.7 | 6.9 | 8.1 | 9.4 | 10.6 | 11.8 | 14 |
| | | | Permissible deviation | 0 −0.4 | | 0 −0.5 | | | 0 −0.6 | | 0 −0.7 |
| $k$ | | | Basic Size | 1.2 | 1.5 | 1.9 | 2.2 | 2.5 | 2.8 | 3.1 | 3.7 |
| | | | Permissible deviation | ±0.1 | | +0.15 | | | | | ±0.2 |
| $r_f$ | | | Approx. | 3 | 3.7 | 4.6 | 5.4 | 6.1 | 6.9 | 7.7 | 9.1 |
| Cross recess | Type H | $m$ | Ref. | 2.2 | 2.5 | 2.9 | 4.0 | 4.3 | 4.7 | 5.0 | 6.3 |
| | | $q$ (Gauge penetration depth) | *Max* | 1.01 | 1.32 | 1.72 | 1.83 | 2.13 | 2.53 | 2.83 | 2.86 |
| | | No. of cross recess | *Min* | 0.65 | 0.95 | 1.34 | 1.30 | 1.60 | 1.99 | 2.29 | 2.31 |
| | | No. of cross recess | | 1 | | 2 | | | | | 3 |
| $r$ | | | *Max* | 0.3 | | 0.4 | | 0.5 | | 0.6 | 0.7 |
| $E$[7] | | | *Max* | 0.15 | 0.2 | 0.25 | | 0.3 | 0.35 | | 0.4 |

| $F^{(7)}$ | | | *Max* | 0.1 | 0.15 | 0.2 | | | 0.25 | | 0.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *G* | | | *Max* | 2° | | | | | | | |
| *l* | | | | The preferable nominal lengths in respect to nominal diameter shall be within the frame of bold lines. However, those marked with × shall not be applied to class 1 and class 4. | | | | | | | |
| *Nom* | Class 1 and Class 4 | | Class 2 and class 3 | | | | | | | | |
| | *Min* | *Max* | *Min* | *Max* | | | | | | | |
| 4 | 3.2 | 4.8 | 3.2 | 4 | | × | | | | | |
| 5 | 4.2 | 5.8 | 4.2 | 5 | | | × | | | | |
| 6 | 5.2 | 6.8 | 5.2 | 6 | | | | × | × | | |
| 8 | 7.2 | 8.8 | 7.2 | 8 | | | | | | × | × |
| 10 | 9.2 | 10.8 | 9.2 | 10 | | | | | | | × |
| 12 | 11.2 | 12.8 | 11.2 | 12 | | | | | | | × |
| 14 | 13.2 | 14.8 | 13.2 | 14 | | | | | | | |
| 16 | 15.2 | 16.8 | 15.2 | 16 | | | | | | | |
| 20 | 19.2 | 20.8 | 18.8 | 20 | | | | | | | |
| 25 | 24.2 | 25.8 | 23.8 | 25 | | | | | | | |
| 30 | 28.8 | 31.2 | 28.8 | 30 | | | | | | | |
| 35 | 33.8 | 36.2 | 33.8 | 35 | | | | | | | |
| 40 | 38.8 | 41.2 | 38.4 | 40 | | | | | | | |

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**Table 5 Shapes and dimensions of Binding head tapping Screws**
(*Clause 3*)

All dimension in millimeters

| **Nominal diameter of threads** | | **2**[6] | **2.5**[6] | **3** | **3.5** | **4** | **4.5** | **5** | **6** |
|---|---|---|---|---|---|---|---|---|---|
| $d_k$ | Basic Size | 4.3 | 5.3 | 6.3 | 7.3 | 8.3 | 9.3 | 10.3 | 12.4 |
| | Permissible deviation | 0 −0.4 | | 0 −0.5 | | | 0 −0.6 | | 0 −0.7 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *k* | | | Approx. | 0.85 | 1 | 1.3 | 1.5 | 1.7 | 1.9 | 2.1 | 2.4 |
| *f* | | | Basic Size | 0.35 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1 | 1.3 |
| | | | Permissible deviation | ±0.1 | | | ±0.15 | | | | |
| *k*+*f* | | | Basic Size | 1.2 | 1.5 | 1.9 | 2.2 | 2.5 | 2.8 | 3.1 | 3.7 |
| | | | Permissible deviation | ±0.15 | | | ±0.2 | | | | |
| Cross recess | Type H | *m* | Ref. | 2.2 | 2.5 | 3.7 | 4.0 | 4.3 | 4.7 | 5.0 | 6.3 |
| | | *q* (Gauge penetration depth) | *Max* | 1.01 | 1.32 | 1.53 | 1.83 | 2.13 | 2.53 | 2.83 | 2.86 |
| | | No. of cross recess | *Min* | 0.65 | 0.95 | 1.01 | 1.30 | 1.60 | 1.99 | 2.29 | 2.31 |
| | | No. of cross recess | | 1 | | 2 | | | | | 3 |
| *r* | | | *Max* | 0.3 | | 0.4 | | 0.5 | | 0.6 | 0.7 |
| $E^{(7)}$ | | | *Max* | 0.15 | 0.2 | 0.25 | | 0.3 | 0.35 | | 0.4 |
| $F^{(7)}$ | | | *Max* | 0.1 | 0.15 | 0.2 | | | 0.25 | | 0.3 |
| *G* | | | *Max* | 2° | | | | | | | |

| *l* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Nom* | Class 1 and Class 4 | | Class 2 and class 3 | | The preferable nominal lengths in respect to nominal diameter shall be within the frame of bold lines. However, those marked with × shall not be applied to class 1 and class 4. | | | | | | | |
| | *Min* | *Max* | *Min* | *Max* | | | | | | | | |
| 4 | 3.2 | 4.8 | 3.2 | 4 | | × | | | | | | |
| 5 | 4.2 | 5.8 | 4.2 | 5 | | | × | | | | | |
| 6 | 5.2 | 6.8 | 5.2 | 6 | | | | × | × | | | |
| 8 | 7.2 | 8.8 | 7.2 | 8 | | | | | | × | × | |
| 10 | 9.2 | 10.8 | 9.2 | 10 | | | | | | | × | × |
| 12 | 11.2 | 12.8 | 11.2 | 12 | | | | | | | | × |
| 14 | 13.2 | 14.8 | 13.2 | 14 | | | | | | | | |

| | | | | |
|---|---|---|---|---|
| 16 | 15.2 | 16.8 | 15.2 | 16 |
| 20 | 19.2 | 20.8 | 18.8 | 20 |
| 25 | 24.2 | 25.8 | 23.8 | 25 |
| 30 | 28.8 | 31.2 | 28.8 | 30 |
| 35 | 33.8 | 36.2 | 33.8 | 35 |
| 40 | 38.8 | 41.2 | 38.4 | 40 |

**Table 6 shapes and dimensions of Brazier Head tapping Screws**
(*Clause 3*)

All dimension in millimeters

| **Nominal diameter of threads** | | | | **2**[(6)] | **2.5**[(6)] | **3** | **3.5** | **4** | **4.5** | **5** | **6** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $d_k$ | | | Basic Size | 4.2 | 5.5 | 6.4 | 7.4 | 8.5 | 9.5 | 10.6 | 12.5 |
| | | | Permissible deviation | 0 −0.4 | | 0 −0.5 | | | 0 −0.6 | | 0 −0.7 |
| $k$ | | | Basic Size | 1.5 | 2.0 | 2.45 | 2.6 | 2.7 | 3.05 | 3.4 | 4.1 |
| | | | Permissible deviation | ±0.1 | | +0.15 | | | | | ±0.2 |
| $r_f$ | | | Approx. | 2.2 | 2.9 | 3.4 | 3.9 | 4.6 | 5.1 | 5.7 | 6.7 |
| Cross recess | Type H | $m$ | Ref | 2.2 | 2.6 | 3.8 | 3.9 | 4.1 | 4.5 | 4.9 | 6.3 |
| | | $q$ (Gauge penetration | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | depth) | *Max* | 1.01 | 1.42 | 1.63 | 1.73 | 1.93 | 2.33 | 2.73 | 2.86 |
| | | No. of cross recess | *Min* | 0.63 | 1.00 | 1.06 | 1.16 | 1.35 | 1.74 | 2.14 | 2.26 |
| | | No. of cross recess | | 1 | | 2 | | | | | 3 |
| *r* | | | *Max* | 0.3 | | 0.4 | | 0.5 | | 0.6 | 0.7 |
| $E^{(7)}$ | | | *Max* | 0.15 | 0.2 | 0.25 | | 0.3 | 0.35 | | 0.4 |
| $F^{(7)}$ | | | *Max* | 0.1 | 0.15 | 0.2 | | | 0.25 | | 0.3 |
| *G* | | | *Max* | 2° | | | | | | | |

| *l* | | | | | The preferable nominal lengths in respect to nominal diameter shall be within the frame of bold lines. However, those marked with (×) shall not be applied to class 1 and class 4. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Nom* | Class 1 and Class 4 | | Class 2 and class 3 | | | | | | | | |
| | *Min* | *Max* | *Min* | *Max* | | | | | | | |
| 4 | 3.2 | 4.8 | 3.2 | 4 | | × | | | | | |
| 5 | 4.2 | 5.8 | 4.2 | 5 | | | × | | | | |
| 6 | 5.2 | 6.8 | 5.2 | 6 | | | | × | × | | |
| 8 | 7.2 | 8.8 | 7.2 | 8 | | | | | | × | × |
| 10 | 9.2 | 10.8 | 9.2 | 10 | | | | | | | × |
| 12 | 11.2 | 12.8 | 11.2 | 12 | | | | | | | × |
| 14 | 13.2 | 14.8 | 13.2 | 14 | | | | | | | |
| 16 | 15.2 | 16.8 | 15.2 | 16 | | | | | | | |
| 20 | 19.2 | 20.8 | 18.8 | 20 | | | | | | | |
| 25 | 24.2 | 25.8 | 23.8 | 25 | | | | | | | |
| 30 | 28.8 | 31.2 | 28.8 | 30 | | | | | | | |
| 35 | 33.8 | 36.2 | 33.8 | 35 | | | | | | | |
| 40 | 38.8 | 41.2 | 38.4 | 40 | | | | | | | |

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**Table 1 Slotted Pan Head screws**
(*Clause 3*)

All dimension in millimeters

**Doc: PGD 37 (25240) WC**
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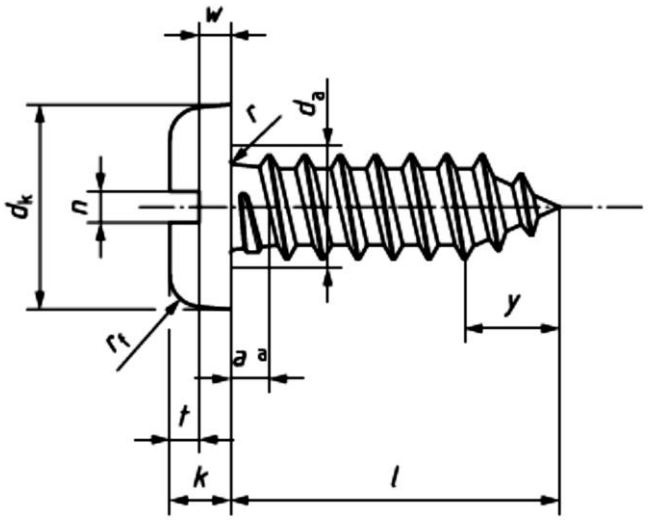
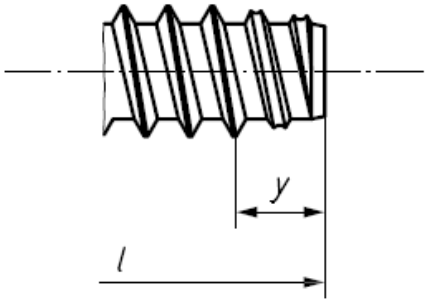
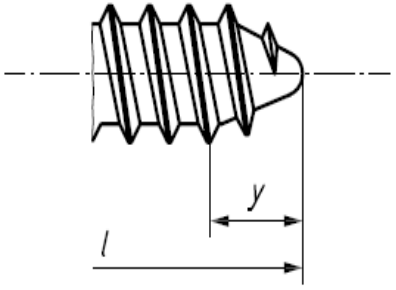



**a) Type C**




b) Type F




c) Type R

| **Thread size** | | | **ST2.2** | **ST 2.9** | **ST 3.5** | **ST 4.2** | **ST 4.8** | **ST 5.5** | **ST 6.3** | **ST 8** | **ST 9.5** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *P*[1)] | | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| *a, Max* | | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| $d_a$, *Max* | | | 2.8 | 3.5 | 4.1 | 4.9 | 5.5 | 6.3 | 7.1 | 9.2 | 10.7 |
| $d_k$ | | *Max* | 4.0 | 5.6 | 7.0 | 8.0 | 9.5 | 11.0 | 12.0 | 16.0 | 20.0 |
| | | *Min* | 3.7 | 5.3 | 6.6 | 7.6 | 9.1 | 10.6 | 11.6 | 15.6 | 19.5 |
| *k* | | *Max* | 1.3 | 1.8 | 2.1 | 2.4 | 3.0 | 3.2 | 3.6 | 4.8 | 6.0 |
| | | *Min* | 1.1 | 1.6 | 1.9 | 2.2 | 2.7 | 2.9 | 3.3 | 4.5 | 5.7 |
| *n* | | *Nom* | 0.5 | 0.8 | 1 | 1.2 | 1.2 | 1.6 | 1.6 | 2 | 2.5 |
| | | *Max* | 0.70 | 1.00 | 1.20 | 1.51 | 1.51 | 1.91 | 1.91 | 2.31 | 2.81 |
| | | *Min* | 0.56 | 0.86 | 1.06 | 1.26 | 1.26 | 1.66 | 1.66 | 2.06 | 2.56 |
| *r, Max* | | | 0.10 | 0.10 | 0.10 | 0.20 | 0.20 | 0.25 | 0.25 | 0.40 | 0.40 |
| $r_f$, *Ref.* | | | 0.6 | 0.8 | 1.0 | 1.2 | 1.5 | 1.6 | 1.8 | 2.4 | 3.0 |
| *t, Min* | | | 0.5 | 0.7 | 0.8 | 1.0 | 1.2 | 1.3 | 1.4 | 1.9 | 2.4 |
| *w, Min* | | | 0.5 | 0.7 | 0.8 | 0.9 | 1.2 | 1.3 | 1.4 | 1.9 | 2.4 |
| *y* ref. | | Type C | 2.0 | 2.6 | 3.2 | 3.7 | 4.3 | 5.0 | 6.0 | 7.5 | 8.0 |
| | | Type F | 1.6 | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 | 4.2 | 4.2 |
| | | Type R | — | — | 2.7 | 3.2 | 3.6 | 4.3 | 5.0 | 6.3 | — |

| | *l*[2)] Type C and Type R | | Type F | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Nom* | *Min* | *Max* | *Min* | *Max* | | | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | | — | — | — | — | — | — | — | — | — |
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | | | — | — | — | — | — | — |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | | — | — | — | — |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | | | — | — |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | | | | |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | | | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | Range of preferred length | | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | | | | |

[1] *P* = pitch of the thread.

[2] Sizes with lengths marked with a dash (—) cannot be manufactured.

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| **Thread size** | | | **ST 2.2** | **ST 2.9** | **ST 3.5** | **ST 4.2** | **ST 4.8** | **ST 5.5** | **ST 6.3** | **ST 8** | **ST 9.5** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *P*[1)] | | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| *a, Max* | | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| $d_k$ | Theoretical[2)] | *Max* | 4.4 | 6.3 | 8.2 | 9.4 | 10.4 | 11.5 | 12.6 | 17.3 | 20.0 |
| | Actual | *Max* | 3.8 | 5.5 | 7.3 | 8.4 | 9.3 | 10.3 | 11.3 | 15.8 | 18.3 |
| | | *Min* | 3.5 | 5.2 | 6.9 | 8.0 | 8.9 | 9.9 | 10.9 | 15.4 | 17.8 |
| *k, Max* | | | 1.10 | 1.70 | 2.35 | 2.60 | 2.80 | 3.00 | 3.15 | 4.65 | 5.25 |
| *n* | | *Nom* | 0.5 | 0.8 | 1 | 1.2 | 1.2 | 1.6 | 1.6 | 2 | 2.5 |
| | | *Max* | 0.70 | 1.00 | 1.20 | 1.51 | 1.51 | 1.91 | 1.91 | 2.31 | 2.81 |
| | | *Min* | 0.56 | 0.86 | 1.06 | 1.26 | 1.26 | 1.66 | 1.66 | 2.06 | 2.56 |
| *r, Max* | | | 0.8 | 1.2 | 1.4 | 1.6 | 2.0 | 2.2 | 2.4 | 3.2 | 4.0 |
| *t* | | *Max* | 0.60 | 0.85 | 1.20 | 1.30 | 1.40 | 1.50 | 1.60 | 2.30 | 2.60 |
| | | *Min* | 0.4 | 0.6 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 | 1.8 | 2.0 |
| *y*, ref. | | Type C | 2.0 | 2.6 | 3.2 | 3.7 | 4.3 | 5.0 | 6.0 | 7.5 | 8.0 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Type F | | 1.6 | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 | 4.2 | 4.2 |
| | | | Type R | | — | — | 2.7 | 3.2 | 3.6 | 4.3 | 5.0 | 6.3 | — |
| | $l^{3)}$ Type C and Type R | | Type F | | | | | | | | | | |
| *Nom* | *Min* | *Max* | *Min* | *Max* | | | | | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | | — | — | — | — | — | — | — | — |
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | | — | — | — | — | — | — | — |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | | — | — | — | — |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | | | — | — |
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | | | | — |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | | | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | | Range of preferred length | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | | | | |

1) $P$ = pitch of the thread.

2) In accordance with ISO 7721

3) Sizes with lengths marked with a dash (—) cannot be manufactured.

**Doc: PGD 37 (25240) WC**
**August 2024**

**Table 3 Slotted Raised Countersunk (Oval) head Screws**
(*Clause 3*)

All dimension in millimeters

**Doc: PGD 37 (25240) WC**
**August 2024**

| **Thread size** | | | | **ST 2.2** | **ST 2.9** | **ST 3.5** | **ST 4.2** | **ST 4.8** | **ST 5.5** | **ST 6.3** | **ST 8** | **ST 9.5** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *P*[1)] | | | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| *a, Max* | | | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| $d_k$ | Theoretical[2)] | | max. | 4.4 | 6.3 | 8.2 | 9.4 | 10.4 | 11.5 | 12.6 | 17.3 | 20.0 |
| | Actual | | *Max* | 3.8 | 5.5 | 7.3 | 8.4 | 9.3 | 10.3 | 11.3 | 15.8 | 18.3 |
| | | | *Min* | 3.5 | 5.2 | 6.9 | 8.0 | 8.9 | 9.9 | 10.9 | 15.4 | 17.8 |
| *f* | | | ≈ | 0.5 | 0.7 | 0.8 | 1.0 | 1.2 | 1.3 | 1.4 | 2.0 | 2.3 |
| *k, Max* | | | | 1.10 | 1.70 | 2.35 | 2.60 | 2.80 | 3.00 | 3.15 | 4.65 | 5.25 |
| *n* | | *g* | *Nom* | 0.5 | 0.8 | 1 | 1.2 | 1.2 | 1.6 | 1.6 | 2 | 2.5 |
| | | | *Max* | 0.70 | 1.00 | 1.20 | 1.51 | 1.51 | 1.91 | 1.91 | 2.31 | 2.81 |
| | | | *Min* | 0.56 | 0.86 | 1.06 | 1.26 | 1.26 | 1.66 | 1.66 | 2.06 | 2.56 |
| *r, Max* | | | | 0.8 | 1.2 | 1.4 | 1.6 | 2.0 | 2.2 | 2.4 | 3.2 | 4.0 |
| $r_f$ | | | ≈ | 4.0 | 6.0 | 8.5 | 9.5 | 9.5 | 11.0 | 12.0 | 16.5 | 19.5 |
| *t* | | | *Max* | 1.00 | 1.45 | 1.70 | 1.90 | 2.40 | 2.60 | 2.80 | 3.70 | 4.40 |
| | | | *Min* | 0.8 | 1.2 | 1.4 | 1.6 | 2.0 | 2.2 | 2.4 | 3.2 | 3.8 |
| *y* ref. | | | Type C | 2.0 | 2.6 | 3.2 | 3.7 | 4.3 | 5.0 | 6.0 | 7.5 | 8.0 |
| | | | Type F | 1.6 | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 | 4.2 | 4.2 |
| | | | Type R | — | — | 2.7 | 3.2 | 3.6 | 4.3 | 5.0 | 6.3 | — |

| *Nom* | *l*[3)] Type C and Type R | | Type F | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Min* | *Max* | *Min* | *Max* | | | | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | | — | — | — | — | — | — | — |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | | — | — | — | — |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | | | — | — |
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | | | | — |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | | | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | Range of preferred length | | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | | | | |

[1] *P* = pitch of the thread.

[2] In accordance with ISO 7721

[3] Sizes with lengths marked with a dash (—) cannot be manufactured.

**Doc: PGD 37 (25240) WC**
**August 2024**

**Table 1 Dimensions of Hexalobular Socket Pan Head Tapping Screws**
(*Clause 3*)

All dimension in millimeters

| **Thread sizes** | | | **ST2.9** | **ST3.5** | **ST4.2** | **ST4.8** | **ST5.5** | **ST6.3** |
|---|---|---|---|---|---|---|---|---|
| $P^1$ | | | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 |
| *a* | | | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 |
| $d_a$, *Max* | | | 3.5 | 4.1 | 4.9 | 5.6 | 6.3 | 7.3 |
| $d_k$ | *Nom = Max* | | 5.6 | 7.00 | 8.00 | 9.50 | 11.00 | 12.00 |
| | *Min* | | 5.3 | 6.64 | 7.64 | 9.14 | 10.57 | 11.57 |
| *k* | *Nom = Max* | | 2.4 | 2.6 | 3.1 | 3.7 | 4.0 | 4.6 |
| | *Min* | | 2.15 | 2.35 | 2.8 | 3.4 | 3.7 | 4.3 |
| *r*, *Min* | | | 0.1 | 0.1 | 0.2 | 0.2 | 0.25 | 0.25 |
| $r_1$ | | ≈ | 5 | 6 | 6.5 | 8 | 9 | 10 |
| *y* ref. | Type C | | 2.6 | 3.2 | 3.7 | 4.3 | 5 | 6 |
| | Type F | | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 |
| | Type R | | — | 2.7 | 3.2 | 3.6 | 4.3 | 5 |
| Hexalobular socket | Socket No. | | **10** | **15** | **20** | **25** | **25** | **30** |
| | *A* | Ref. | 2.8 | 3.35 | 3.95 | 4.5 | 4.5 | 5.6 |
| | *t* | | 1.27 | 1.40 | 1.80 | 2.03 | 2.03 | 2.42 |

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| | | | | | 1.01 | 1.14 | 1.42 | 1.65 | 1.65 | 2.02 |
|---|---|---|---|---|---|---|---|---|---|---|
| $l^2$ | | | | | | | | | | |
| | **Type C and Type R** | | **Type F** | | | | | | | |
| *Nom* | *Min* | *Max* | *Min* | *Max* | | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | — | — | — | — | — | — |
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | — | — | — | — | — |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | — | — |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | |
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | |

NOTE — Preferred lengths are the ones between the bold stepped lines.

[1]*P* is the pitch of the thread.

[2]Sizes with lengths marked with a dash (—) in this table cannot be manufactured.

**Table 2 Dimensions of Hexalobular Countersunk Head Tapping Screws**
(*Clause 3*)

All dimension in millimeters

| **Thread sizes** | | | **ST2.9** | **ST3.5** | **ST4.2** | **ST4.8** | **ST5.5** | **ST6.3** |
|---|---|---|---|---|---|---|---|---|
| $P^1$ | | | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 |
| *a* | | | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 |
| $d_k{}^2$ | Theoretical | *Max* | 6.3 | 8.2 | 9.4 | 10.4 | 11.5 | 12.6 |
| | Actual | *Max* | 5.5 | 7.3 | 8.4 | 9.3 | 10.3 | 11.3 |
| | | *Min* | 5.2 | 6.9 | 8.0 | 8.9 | 9.9 | 10.9 |
| $k^2$, *Max* | | | 1.7 | 2.35 | 2.6 | 2.8 | 3 | 3.15 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *r, Max* | | | 1.2 | 1.4 | 1.6 | 2 | 2.2 | 2.4 |
| *y* ref. | Type C | | 2.6 | 3.2 | 3.7 | 4.3 | 5 | 6 |
| | Type F | | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 |
| | Type R | | — | 2.7 | 3.2 | 3.6 | 4.3 | 5 |
| Hexalobular socket | Socket No. | | **10** | **15** | **20** | **25** | **25** | **30** |
| | *A* | Ref. | 2.8 | 3.35 | 3.95 | 4.5 | 4.5 | 5.6 |
| | *t* | *Max* | 0.91 | 1.30 | 1.58 | 1.78 | 2.03 | 2.42 |
| | | *Min* | 0.65 | 1.00 | 1.14 | 1.39 | 1.65 | 2.02 |

| $l^3$ | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Type C and Type R** | | **Type F** | | | | | | | |
| *Nom* | *Min* | *Max* | *Min* | *Max* | | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | — | — | — | — | — | — |
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | — | — | — | — | — |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | — | — |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | |
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | |

NOTE — Preferred lengths are the ones between the bold stepped lines.

[1]*P* is the pitch of the thread.
[2]Gauging of head dimensions is specified in IS 11362.
[3]Sizes with lengths marked with a dash (—) in this table cannot be manufactured.

**Table 3 Dimensions of Hexalobular Socket Raised Countersunk (Oval) Head Tapping Screws**
**(***Clause 3*)

All dimension in millimeters

**Doc: PGD 37 (25240) WC**
**August 2024**

| **Thread sizes** | | | **ST2.9** | **ST3.5** | **ST4.2** | **ST4.8** | **ST5.5** | **ST6.3** |
|---|---|---|---|---|---|---|---|---|
| $P^1$ | | | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 |
| *a* | | | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 |
| $d_k{}^2$ | Theoretical | *Max* | 6.3 | 8.2 | 9.4 | 10.4 | 11.5 | 12.6 |
| | Actual | *Max* | 5.5 | 7.3 | 8.4 | 9.3 | 10.3 | 11.3 |
| | | *Min* | 5.2 | 6.9 | 8.0 | 8.9 | 9.9 | 10.9 |
| *f* | | ≈ | 0.7 | 0.8 | 1 | 1.2 | 1.3 | 1.4 |
| $k^2$, *Max* | | | 1.7 | 2.35 | 2.6 | 2.8 | 3 | 3.15 |
| *r*, *Max* | | | 1.2 | 1.4 | 1.6 | 2 | 2.2 | 2.4 |
| $r_f$ | | ≈ | 6.0 | 8.5 | 9.5 | 9.5 | 11 | 12 |
| *y* ref. | Type C | | 2.6 | 3.2 | 3.7 | 4.3 | 5 | 6 |
| | Type F | | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 |
| | Type R | | — | 2.7 | 3.2 | 3.6 | 4.3 | 5 |
| Hexalobular socket | Socket No. | | **10** | **15** | **20** | **25** | **25** | **30** |
| | *A* | Ref. | 2.8 | 3.35 | 3.95 | 4.5 | 4.5 | 5.6 |
| | *t* | *Max* | 1.27 | 1.40 | 1.80 | 2.03 | 2.03 | 2.42 |
| | | *Min* | 1.01 | 1.14 | 1.42 | 1.65 | 1.65 | 2.02 |

| $l^3$ | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Type C and Type R** | | **Type F** | | | | | | |
| *Nom* | *Min* | *Max* | *Min* | *Max* | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | — | — | — | — | — |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | — | — |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | |
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | |

NOTE — Preferred lengths are the ones between the bold stepped lines.

[1]*P* is the pitch of the thread.
[2]Gauging of head dimensions is specified in IS 11362.
[3]Sizes with lengths marked with a dash (—) in this table cannot be manufactured.

**Doc: PGD 37 (25240) WC**
**August 2024**

**Table 4 Dimensions of Hexagon Flange Head**
(*Clause* 3)

All dimensions are in millimeters.

| **Thread size** | | **ST2.2** | **ST2.9** | **ST3.5** | **ST4.2** | **ST4.8** | **ST5.5** | **ST6.3** | **ST8** | **ST9.5** |
|---|---|---|---|---|---|---|---|---|---|---|
| *P*[1] | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| *a, Max* | | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 | 2.1 |
| $d_a$, *Max* | | 2.8 | 3.5 | 4.1 | 4.9 | 5.6 | 6.3 | 7.3 | 9.2 | 10.7 |
| $d_c$ | *Max* | 4.5 | 6.4 | 7.5 | 8.5 | 10.0 | 11.2 | 12.8 | 16.8 | 21.0 |
| | *Min* | 4.1 | 5.9 | 6.9 | 7.8 | 9.3 | 10.3 | 11.8 | 15.5 | 19.3 |
| *c, Min* | | 0.3 | 0.4 | 0.5 | 0.6 | 0.6 | 0.8 | 1.0 | 1.2 | 1.4 |
| *s* | *Nom=Max* | 3.00 | 4.00 | 5.00 | 5.50 | 7.00 | 7.00 | 8.00 | 10.00 | 13.00 |
| | *Min* | 2.86 | 3.82 | 4.82 | 5.32 | 6.78 | 6.78 | 7.78 | 9.78 | 12.73 |
| *e, Min* | | 3.16 | 4.27 | 5.36 | 5.92 | 7.55 | 7.55 | 8.66 | 10.89 | 14.16 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *k, Max* | | | 2.2 | 3.2 | 3.8 | 4.3 | 5.2 | 6.0 | 6.7 | 8.6 | 10.7 |
| $k_w$, *Min* | | | 0.85 | 1.25 | 1.60 | 1.80 | 2.20 | 2.50 | 2.80 | 3.70 | 4.60 |
| $r_1$, *Min* | | | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 |
| $r_2$, *Max* | | | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.6 |
| *y* ref. | | Type C | 2.0 | 2.6 | 3.2 | 3.7 | 4.3 | 5.0 | 6.0 | 7.5 | 8.0 |
| | | Type F | 1.6 | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.6 | 4.2 | 4.2 |
| | | Type R | — | — | 2.7 | 3.2 | 3.6 | 4.3 | 5.0 | 6.3 | — |
| $l^2$ | | | | | | | | | | | |
| | Type C and type R | | Type F | | | | | | | | |
| *Nom.* | *Min* | *Max* | *Min* | *Max* | | | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | | — | — | — | — | — | — | — | — |
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | | — | — | — | — | — | — | — |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | | — | — | — | — |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | | | — | — |
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | | | | — |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | | | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | Range of preferred length | | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | | | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | | | | |

[1]*P* is the pitch of the thread.
[2]Sizes with lengths marked with a dash (—)shall not be manufactured.

**Doc: PGD 37 (25240) WC**
**August 2024**

**Table 5 Dimensions of Hexagon Washer Head**

(Clause 3)

All dimension in millimeters

**Doc: PGD 37 (25240) WC**
**August 2024**

| **Thread size** | | **ST2.2** | **ST2.9** | **(ST3.5)** | **ST3.9** | **ST4.22** | **ST4.8** | **(ST5.5)** | **ST6.3.** | **ST8** |
|---|---|---|---|---|---|---|---|---|---|---|
| *P*[1] | | 0.8 | 1.1 | 1.3 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 |
| *a, Max* | | 0.8 | 1.1 | 1.3 | 1.3 | 1.4 | 1.6 | 1.8 | 1.8 | 2.1 |
| *c, Min* | | 0.25 | 0.4 | 0.6 | 0.6 | 0.8 | 0.9 | 1.0 | 1.0 | 1.2 |
| $d_a$, *Max* | | 2.8 | 3.5 | 4.1 | 4.6 | 4.9 | 5.6 | 6.3 | 7.3 | 9.2 |
| $d_c$ | *Max* | 4.2 | 6.3 | 8.3 | 8.3 | 8.8 | 10.5 | 11.0 | 13.5 | 18.0 |
| | *Min* | 3.8 | 5.8 | 7.6 | 7.6 | 8.1 | 9.8 | 10.0 | 12.2 | 16.7 |
| *e, Min* | | 3.20 | 4.28 | 5.96 | 5.96 | 7.59 | 8.71 | 8.71 | 10.95 | 14.26 |
| *k, Max* | *Nom =Max* | 2.0 | 2.8 | 3.4 | 3.4 | 4.1 | 4.3 | 5.4 | 5.9 | 7.0 |
| | *Min* | 1.7 | 2.5 | 3.0 | 3.0 | 3.6 | 3.8 | 4.8 | 5.3 | 6.4 |
| $k_w$, *Min* | | 0.9 | 1.3 | 1.5 | 1.5 | 1.8 | 2.2 | 2.7 | 3.1 | 3.3 |
| $r_1$, *Min* | | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.25 | 0.25 | 0.4 |
| $r_2$, *Max* | | 0.15 | 0.2 | 0.25 | 0.25 | 0.3 | 0.3 | 0.4 | 0.5 | 0.6 |
| *s* | *Nom =max* | 3.00 | 4.00 | 5.50 | 5.50 | 7.00 | 8.00 | 8.00 | 10.00 | 13.00 |
| | *Min* | 2.86 | 3.82 | 5.32 | 5.32 | 6.78 | 7.87 | 7.78 | 9.78 | 12.73 |
| *y* ref. | Type C | 2.0 | 2.6 | 3.2 | 3.5 | 3.7 | 4.3 | 5.0 | 6.0 | 7.5 |
| | Type F | 1.6 | 2.1 | 2.5 | 2.7 | 2.8 | 3.2 | 3.6 | 3.6 | 4.2 |
| | Type R | — | — | 2.7 | 3.0 | 3.2 | 3.6 | 4.3 | 5.0 | 6.3 |

| $l^2$ | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type C and type R | | Type F | | | | | | | | | |
| *Nom.* | *Min* | *Max* | *Min* | *Max* | | | | | | | | |
| **4.5** | 3.7 | 5.3 | 3.7 | 4.5 | | | Screws with too short lengths | | | | | |
| **6.5** | 5.7 | 7.3 | 5.7 | 6.5 | | | | | | | | |
| **9.5** | 8.7 | 10.3 | 8.7 | 9.5 | | | | | | | | |
| **13** | 12.2 | 13.8 | 12.2 | 13.0 | | | | | | | | |
| **16** | 15.2 | 16.8 | 15.2 | 16.0 | | | | | | | | |
| **19** | 18.2 | 19.8 | 18.2 | 19.0 | | | | | | | | |
| **22** | 21.2 | 22.8 | 20.7 | 22.0 | | | | | | | | |
| **25** | 24.2 | 25.8 | 23.7 | 25.0 | | | | | | | | |
| **32** | 30.7 | 33.3 | 30.7 | 32.0 | | | | | | | | |
| **38** | 36.7 | 39.3 | 36.7 | 38.0 | | Lengths to be agreed between the purchaser and the manufacturer | | | | | | |
| **45** | 43.7 | 46.3 | 43.5 | 45.0 | | | | | | | | |
| **50** | 48.7 | 51.3 | 48.5 | 50.0 | | | | | | | | |

Thread sizes shown in brackets are non-preferred diameters.
[1]*P* is the pitch of the thread.
[2]Sizes with lengths marked with a dash (—)shall not be manufactured.

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