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# International Standard



# 7379

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Hexagon socket head shoulder screws

*Vis de centrage à tête cylindrique à six pans creux et à bout fileté réduit*

First edition — 1983-10-01

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**Descriptors :** fasteners, screws, socket head screws, dimensions, specifications, designation, tolerances of position.

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 7379 was developed by Technical Committee ISO/TC 2, *Fasteners*, and was circulated to the member bodies in December 1981.

It has been approved by the member bodies of the following countries:

|                     |                        |                       |
|---------------------|------------------------|-----------------------|
| Australia           | Germany, F.R.          | New Zealand           |
| Belgium             | Hungary                | Norway                |
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The member bodies of the following countries expressed disapproval of the document on technical grounds:

Ireland  
Netherlands  
Switzerland  
United Kingdom

# Hexagon socket head shoulder screws

## 1 Scope and field of application

This International Standard lays down the specification for hexagon socket head shoulder screws with metric dimensions and nominal shoulder diameters from 6,5 to 25 mm inclusive.

NOTE — Particular attention is drawn to the note in clause 5 concerning the limitation on tensile testing.

If other specifications are required, it is recommended that they should be selected from existing International Standards, for example ISO 261, ISO 888, ISO 898, ISO 965, ISO 1302, ISO 4759/1.

## 2 References

ISO 261, *ISO general purpose metric screw threads — General plan.*

ISO 888, *Bolts, screws and studs — Nominal lengths, and thread lengths for general purpose bolts.*

ISO 898, *Mechanical properties of fasteners.*

ISO 965, *ISO general purpose metric screw threads — Tolerances.*

ISO 1302, *Technical drawings — Method of indicating surface texture on drawings.*

ISO 3209, *Fasteners — Acceptance inspection.*<sup>1)</sup>

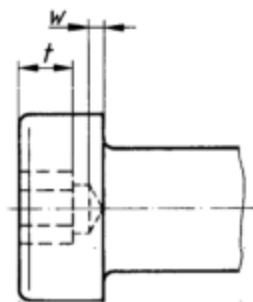
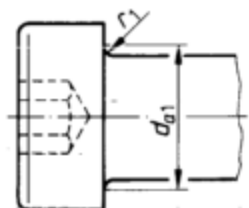
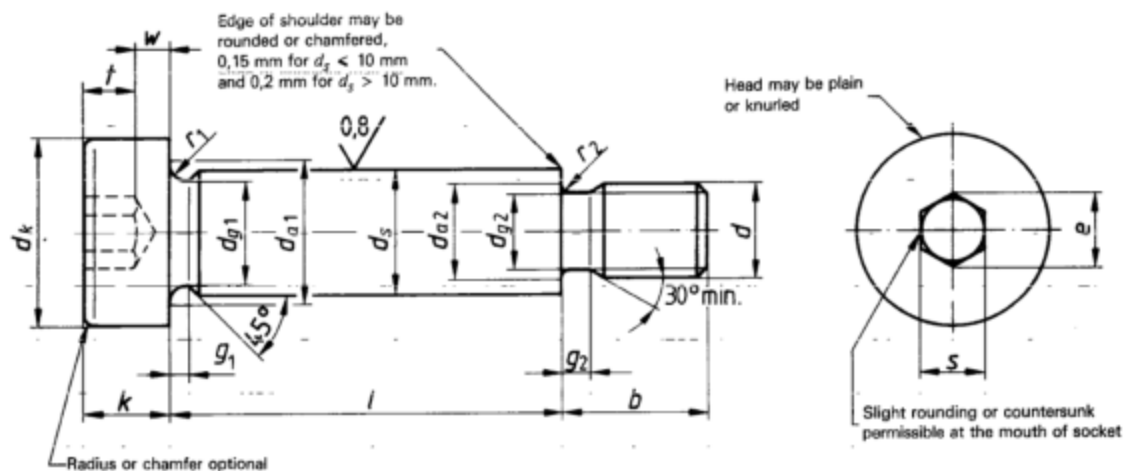
ISO 4042, *Threaded components — Electroplated coatings components.*<sup>1)</sup>

ISO 4755, *Fasteners — Thread undercuts for external metric ISO threads.*

ISO 4759/1, *Tolerances for fasteners — Part 1: Bolts, screws and nuts with thread diameters  $\geq 1,6$  and  $\leq 150$  mm and product grades A, B and C.*

<sup>1)</sup> At present at the stage of draft.

### 3 Dimensions



For broached sockets which are at the maximum limit of size, the overcut resulting from drilling shall not exceed 20 % of the length of any flat of the socket.

NOTE — For form and position tolerances, see clause 4.

Dimensions in millimetres

|          | nom.               | 6,5    | 8     | 10         | 13     | 16     | 20     | 25     |
|----------|--------------------|--------|-------|------------|--------|--------|--------|--------|
| $d_s$    | max.               | 6,487  | 7,987 | 9,987      | 12,984 | 15,984 | 19,980 | 24,980 |
|          | min.               | 6,451  | 7,951 | 9,951      | 12,941 | 15,941 | 19,928 | 24,928 |
|          |                    | M5     | M6    | M8         | M10    | M12    | M16    | M20    |
| $p^{1)}$ |                    | 0,8    | 1     | 1,25       | 1,5    | 1,75   | 2      | 2,5    |
| $b$      | max.               | 9,75   | 11,25 | 13,25      | 16,40  | 18,40  | 22,40  | 27,40  |
|          | min.               | 9,25   | 10,75 | 12,75      | 15,60  | 17,60  | 21,60  | 26,60  |
| $d_k$    | max. <sup>2)</sup> | 10     | 13    | 16         | 18     | 24     | 30     | 36     |
|          | max. <sup>3)</sup> | 10,22  | 13,27 | 16,27      | 18,27  | 24,33  | 30,33  | 36,39  |
|          | min.               | 9,78   | 12,73 | 15,73      | 17,73  | 23,67  | 29,67  | 35,61  |
| $d_{g1}$ | min.               | 5,92   | 7,42  | 9,42       | 12,42  | 15,42  | 19,42  | 24,42  |
| $d_{g2}$ | max.               | 3,86   | 4,58  | 6,25       | 7,91   | 9,57   | 13,33  | 16,57  |
|          | min.               | 3,68   | 4,40  | 6,03       | 7,69   | 9,35   | 12,96  | 16,30  |
| $d_{a1}$ | max.               | 7,5    | 9,2   | 11,2       | 15,2   | 18,2   | 22,4   | 27,4   |
| $d_{a2}$ | max.               | 5      | 6     | 8          | 10     | 12     | 16     | 20     |
| $e$      | min.               | 3,44   | 4,58  | 5,72       | 6,86   | 9,15   | 11,43  | 13,72  |
| $k$      | max.               | 4,5    | 5,5   | 7          | 9      | 11     | 14     | 16     |
|          | min.               | 4,32   | 5,32  | 6,78       | 8,78   | 10,73  | 13,73  | 15,73  |
| $s_1$    | max.               | 2,5    | 2,5   | 2,5        | 2,5    | 2,5    | 2,5    | 3      |
| $s_2$    | max.               | 2      | 2,5   | 3,1        | 3,7    | 4,4    | 5      | 6,3    |
| $r_1$    | min.               | 0,25   | 0,4   | 0,6        | 0,6    | 0,6    | 0,8    | 0,8    |
| $r_2$    | min.               | 0,5    | 0,53  | 0,64       | 0,77   | 0,87   | 1,14   | 1,38   |
| $s$      | nom.               | 3      | 4     | 5          | 6      | 8      | 10     | 12     |
|          | max.               | 3,08   | 4,095 | 5,095      | 6,095  | 8,115  | 10,115 | 12,142 |
|          | min.               | 3,02   | 4,02  | 5,02       | 6,02   | 8,025  | 10,025 | 12,032 |
| $f$      | min.               | 2,4    | 3,3   | 4,2        | 4,9    | 6,6    | 8,8    | 10     |
| $w$      | min.               | 1      | 1,15  | 1,6        | 1,8    | 2      | 3,2    | 3,25   |
|          |                    |        |       |            |        |        |        |        |
| $l^{4)}$ |                    |        |       |            |        |        |        |        |
| nom.     | min.               | max.   |       |            |        |        |        |        |
| 10       | 10                 | 10,25  |       |            |        |        |        |        |
| 12       | 12                 | 12,25  |       |            |        |        |        |        |
| 16       | 16                 | 16,25  |       |            |        |        |        |        |
| 20       | 20                 | 20,25  |       |            |        |        |        |        |
| 25       | 25                 | 25,25  |       |            |        |        |        |        |
| 30       | 30                 | 30,25  |       | Range      |        |        |        |        |
| 40       | 40                 | 40,25  |       | of         |        |        |        |        |
| 50       | 50                 | 50,25  |       | commercial |        |        |        |        |
| 60       | 60                 | 60,25  |       | lengths    |        |        |        |        |
| 70       | 70                 | 70,25  |       |            |        |        |        |        |
| 80       | 80                 | 80,25  |       |            |        |        |        |        |
| 90       | 90                 | 90,25  |       |            |        |        |        |        |
| 100      | 100                | 100,25 |       |            |        |        |        |        |
| 120      | 120                | 120,25 |       |            |        |        |        |        |

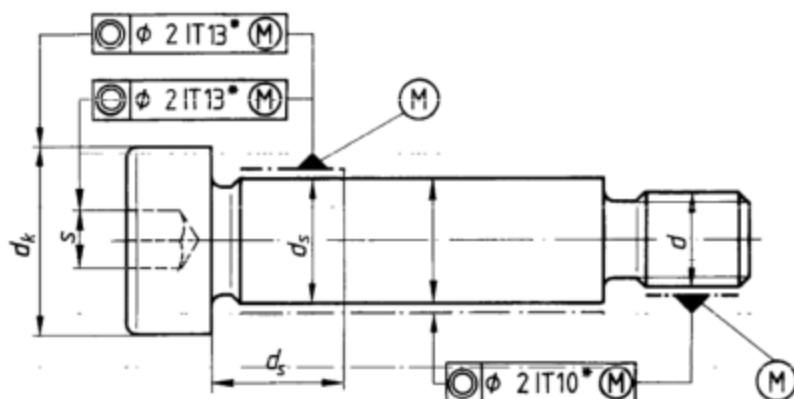
1)  $P$  = pitch of the thread.

2) For plain heads.

3) For knurled heads.

4) Intermediate lengths according to ISO 888 are permissible.

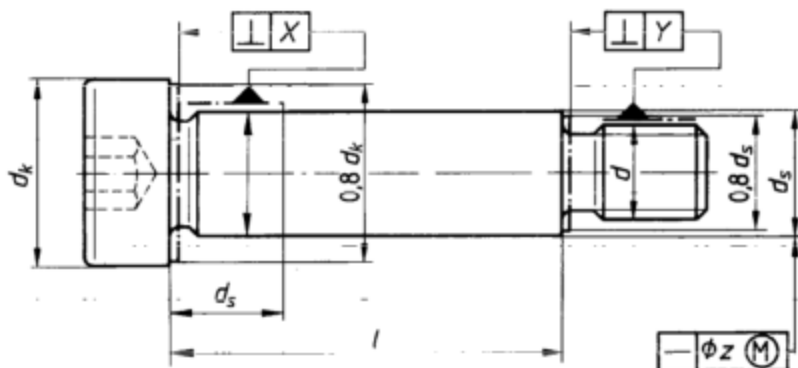
## 4 Geometrical tolerances



Concentricity tolerance of head to shoulder is based on dimension  $d_k$ .

Concentricity tolerance of socket to shoulder is based on dimension  $d_s$ .

Concentricity tolerance of shoulder to thread is based on dimension  $d$ .



Concentricity and perpendicularity tolerances

| Based on $d_k$ | 2 IT13* |
|----------------|---------|
| 10             | 0,44    |
| 13             | 0,54    |
| 16             |         |
| 18             | 0,66    |
| 24             |         |
| 30             | 0,78    |
| 36             |         |

| Based on $d_s$ | 2 IT13* |
|----------------|---------|
| 6,5            | 0,44    |
| 8              |         |
| 10             |         |
| 13             | 0,54    |
| 16             |         |
| 20             | 0,66    |
| 25             |         |

| Based on $d$ | 2 IT10* |
|--------------|---------|
| 5            | 0,12    |
| 6            |         |
| 8            |         |
| 10           | 0,14    |
| 12           |         |
| 16           | 0,17    |
| 20           |         |

| Based on $d_k$ | X    |
|----------------|------|
| 6,5            | 0,15 |
| 8              | 0,18 |
| 10             | 0,24 |
| 13             | 0,31 |
| 16             | 0,34 |
| 20             | 0,42 |
| 25             | 0,50 |

| Based on $d$ | Y    |
|--------------|------|
| 5            | 0,15 |
| 6            |      |
| 8            |      |
| 10           | 0,20 |
| 12           |      |
| 16           | 0,30 |
| 20           |      |

\* The table gives the tolerance corresponding to quality 2 IT13 or 2 IT10 as a function of the respective diameter.

## Straightness tolerance

| Based on         | Tolerance $z$        |
|------------------|----------------------|
| For $d_s < 8$    | $0,002 l + 0,05$ mm  |
| For $d_s \geq 8$ | $0,0025 l + 0,05$ mm |

## 5 Specifications and reference International Standards

|                              |                                                                                                                                                                                                                                                      |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Material</b>              | Steel                                                                                                                                                                                                                                                |
| <b>Thread</b>                | Tolerance<br>5g - 6g                                                                                                                                                                                                                                 |
|                              | International Standards<br>ISO 261, ISO 965                                                                                                                                                                                                          |
| <b>Mechanical properties</b> | Class<br>12.9 <sup>1)</sup>                                                                                                                                                                                                                          |
|                              | International Standard<br>ISO 898/1                                                                                                                                                                                                                  |
| <b>Tolerances</b>            | Product grade<br>A                                                                                                                                                                                                                                   |
|                              | International Standard<br>ISO 4759/1                                                                                                                                                                                                                 |
| <b>Finish</b>                | Shoulder<br>To surface roughness of $R_a$ value = $0,8 \mu\text{m}$ in accordance with ISO 1302. Tolerances only apply before electroplating.                                                                                                        |
|                              | Other features<br>Black oxide (thermal or chemical).<br>Requirements for electroplating are covered in ISO 4042.<br>If different electroplating requirements are needed for other finishes, they should be negotiated between customer and supplier. |
| <b>Acceptability</b>         | The acceptance procedure is covered in ISO 3269.                                                                                                                                                                                                     |

1) Because of their configuration these screws cannot be subjected to tensile testing. They are nevertheless required to meet all the other material and property requirements for property class 12.9 in ISO 898/1.

## 6 Designation

Example of the designation of a hexagon socket head shoulder screw with a shoulder diameter  $d_s = 10$  mm (thread diameter  $d = \text{M8}$ ) and nominal length  $l = 40$  mm :

Hexagon socket head shoulder screw ISO 7379 - 10 × 40