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INTERNATIONAL STANDARD



4229

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

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**Assembly tools for screws and nuts – Single-head engineer's wrenches – Gaps from 50 to 120 mm**

*Outils de manœuvre pour vis et écrous – Clés à fourche simples – Ouvertures de 50 à 120 mm*

First edition – 1977-12-15

**ITeH STANDARD PREVIEW**  
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ISO 4229:1977

<https://standards.iteh.ai/catalog/standards/sist/aa853f17-abcb-491f-a74d-21f0c353c642/iso-4229-1977>

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UDC 621.883.12

Ref. No. ISO 4229-1977 (E)

**Descriptors** : tools, assembly tools, wrenches, specifications, dimensions, torque.

Price based on 2 pages

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (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 set up 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 4229 was developed by Technical Committee ISO/TC 29, *Small tools*, and was circulated to the member bodies in August 1976.

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

|                |                |                       |
|----------------|----------------|-----------------------|
| Australia      | Ireland        | <u>ISO 4229:1977</u>  |
| Austria        | Israel         | South Africa, Rep. of |
| Belgium        | Italy          | Spain                 |
| Brazil         | Japan          | Sweden                |
| Chile          | Korea, Rep. of | Turkey                |
| Czechoslovakia | Mexico         | U.S.A.                |
| France         | Poland         | U.S.S.R.              |
| India          | Romania        | Yugoslavia            |

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Hungary  
United Kingdom

# Assembly tools for screws and nuts – Single-head engineer’s wrenches – Gaps from 50 to 120 mm

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### 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies characteristics of single-head engineer’s wrenches with gaps from 50 to 120 mm.

Essentially, it includes two parts, the first specifying maximum outside dimensions of heads and the other giving the technical specifications.

### 2 REFERENCES

ISO/R 272, *Hexagon bolts and nuts – Widths across flats, heights of heads, thicknesses of nuts – Metric series.*

ISO 1703, *Assembly tools for screws and nuts – Nomenclature.*

ISO 1711, *Hand operated wrenches and sockets – Technical specifications.*

### 3 MAXIMUM OUTSIDE DIMENSIONS OF HEADS

The maximum outside dimensions of heads are given in table 1.

### 4 TECHNICAL SPECIFICATIONS

#### 4.1 Material

Single-head engineer’s wrenches specified in this International Standard shall be manufactured in carbon steel.

#### 4.2 Hardness

After heat treatment, the hardness of the wrenches shall be at least 36 HRC, in accordance with ISO 1711.

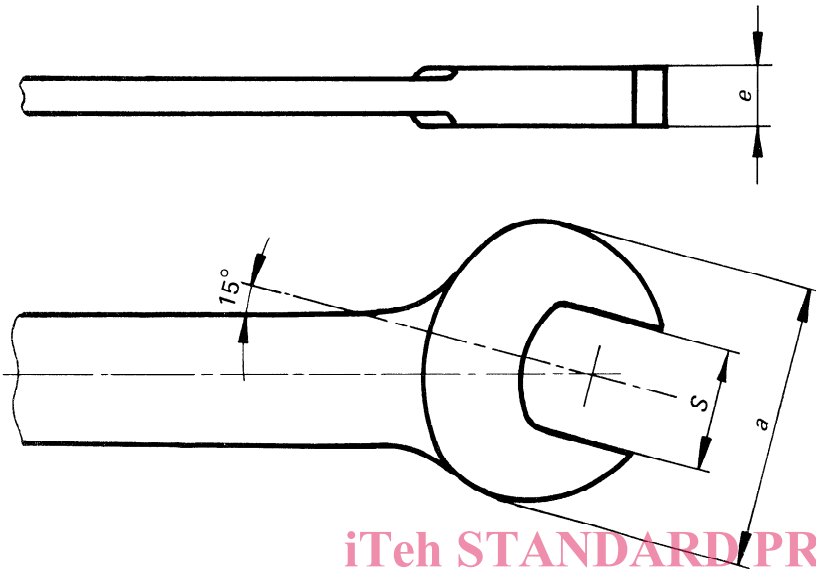
#### 4.3 Test torques

When tested with the test torques given in table 2, the procedure for which is described in ISO 1711, the wrenches shall not show any permanent deformations of the jaws which could influence their usability.

TABLE 1 – Maximum outside dimensions of heads

Dimensions in millimetres

| S   | a <sup>1)</sup><br>max. | e <sup>2)</sup><br>max. |
|-----|-------------------------|-------------------------|
| 50  | 110                     | 20                      |
| 55  | 121                     | 22                      |
| 60  | 131                     | 24                      |
| 65  | 141                     | 26                      |
| 70  | 152                     | 28                      |
| 75  | 162                     | 30                      |
| 80  | 173                     | 32                      |
| 85  | 183                     | 34                      |
| 90  | 188                     | 36                      |
| 95  | 198                     | 38                      |
| 100 | 208                     | 40                      |
| 105 | 218                     | 42                      |
| 110 | 228                     | 44                      |
| 115 | 238                     | 46                      |
| 120 | 248                     | 48                      |



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NOTE – The drawing does not necessarily indicate the shape of the wrench heads.

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- 1) For  $S \leq 85$ ,  $a_{\max} = 2,1 S + 5$   
For  $S > 85$ ,  $a_{\max} = 2 S + 8$
- 2)  $e = 0,4 S$

TABLE 2 – Test torques

| S mm                     | 50  | 55    | 60    | 65    | 70    | 75    | 80    | 85    | 90    | 95    | 100   | 105   | 110   | 115   | 120   |
|--------------------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Test torque $M^{1)}$ N-m | 850 | 1 030 | 1 225 | 1 435 | 1 665 | 1 910 | 2 175 | 2 455 | 2 755 | 3 070 | 3 400 | 3 750 | 4 115 | 4 495 | 4 895 |

1) Minimum test torque  $M = 0,34 S^2$