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**Horology — Functional and non-  
functional jewels**

*Horlogerie — Pierres fonctionnelles et non fonctionnelles*

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ISO 1112:2009

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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 preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 1112 was prepared by Technical Committee ISO/TC 114, *Horology*.

This third edition cancels and replaces the second edition (ISO 1112:1999), which has been technically revised.

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## Introduction

Horological functional jewels, by stabilizing friction and reducing wear, contribute to the quality and longevity of the timekeeping instruments comprising mobile parts. Thus, the number of functional jewels of a timekeeper is a sign of quality. The watch manufacturers use this fact to promote their products and some watch-importing countries use it as a basis for defining custom duties.

The extent of these stakes led to the creation of ISO 1112, in order to specify what are horological functional jewels.

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# Horology — Functional and non-functional jewels

## 1 Scope

This International Standard specifies the technical definitions of functional and non-functional horological movement jewels. It describes the different types of jewels used, and how this is to be marked on a timekeeping instrument or used in advertising.

## 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.

ISO 6426-2, *Horological vocabulary — Part 2: Technical and commercial definitions*

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## 3 Terms and definitions (standards.iteh.ai)

For the purposes of this document, the terms and definitions given in ISO 6426-2 and the following apply.

### 3.1

#### horological jewel

non-metallic movement components whose hardness is higher than HV 1 200

### 3.2

#### functional jewel

**horological jewel** (3.1) that serves to stabilize friction and reduce the wear rate of contacting surfaces of the components of a timekeeping instrument and which satisfy the criteria of Clause 4

NOTE Adapted from ISO 6426-2:2002, definition 8.23.

### 3.3

#### non-functional jewel

**horological jewel** (3.1) that does not satisfy the criteria for a **functional jewel** (3.2)

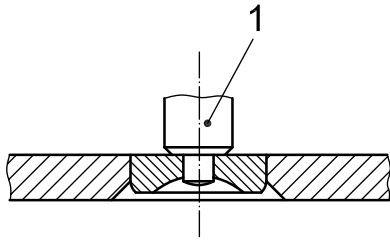
## 4 Functional jewels

### 4.1 General

The following are considered as functional jewels, whatever their shape.

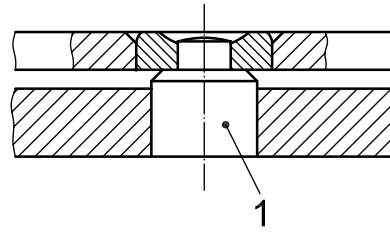
### 4.2 Jewels with a hole serving as radial or axial bearings (or both)

- a) Fixed, with movable arbor (see Figure 1).
- b) Movable, with fixed arbor (see Figure 2).



**Key**  
1 movable arbor

**Figure 1**

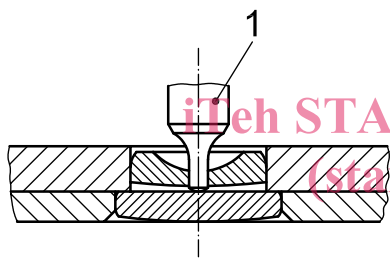


**Key**  
1 fixed arbor

**Figure 2**

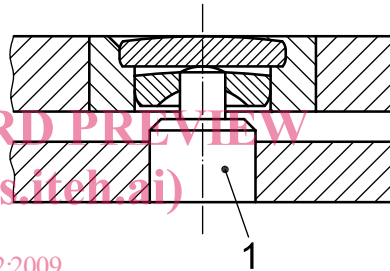
**4.3 Jewels without a hole, serving as axial bearings**

- a) Fixed, with movable arbor (see Figure 3).
- b) Movable, with fixed arbor (see Figure 4).



**Key**  
1 movable arbor

**Figure 3**



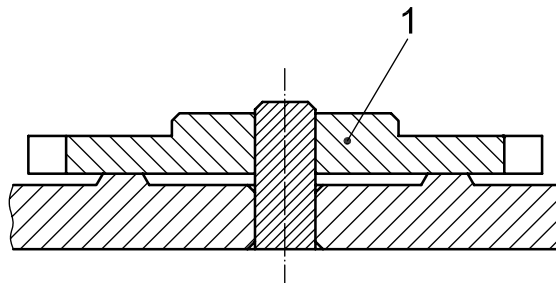
**Key**  
1 fixed arbor

**Figure 4**

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**4.4 Jewels without a hole, serving as radial bearings**

See Figure 5.

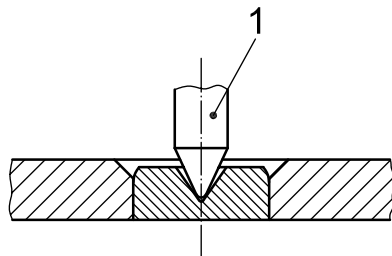


**Key**  
1 movable part

**Figure 5**

#### 4.5 Jewels with conical recesses (cup bearings), serving both as radial and axial bearings

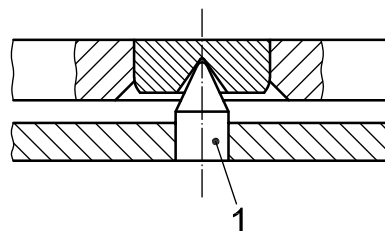
- a) Fixed, with movable arbor (see Figure 6).
- b) Movable, with fixed arbor (see Figure 7).



**Key**

1 movable arbor

**Figure 6**



**Key**

1 fixed arbor

**Figure 7**

#### 4.6 Jewels contributing to the transmission of a force or movement, or both simultaneously

Examples are jewels used for the maintenance of an oscillating system with pallets in accordance with ISO 6426-2.

#### 4.7 Jewelled units comprising several jewels

Examples are ball-bearings or clutch devices for automatic winding mechanisms. Each unit should be counted as a single functional jewel in the description and marking of the instrument (see Clause 6).

### 5 Non-functional jewels

All stones that do not serve the purposes described in Clause 4 are regarded as non-functional jewels, as follows.

- a) Jewels for ornament and replacement.
- b) Jewels covering a jewel hole but not serving as an axial bearing (see Figure 8).  
 EXAMPLE Oil chamber, dust protection.
- c) Jewels serving as a support for moving parts such as the hour wheel, ratchet wheel, transmission wheel, winding shaft.
- d) Jewels serving to limit the occasional displacement of an oscillating mass, or serving as a support for date and calendar discs, etc. (see Figures 9 and 10).

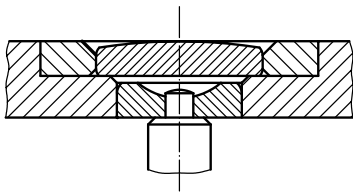


Figure 8

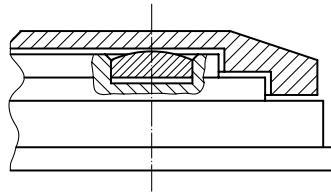


Figure 9

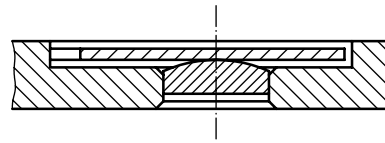


Figure 10

## 6 Description or marking

In sales literature and general advertising, and in marking the instrument, only the number of functional jewels and functional jewelled units (see 4.7) shall be mentioned when describing the characteristics of the timekeeping instrument.

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