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**Castors and wheels — Requirements for  
castors for hospital beds**

*Roues et roulettes — Exigences pour roulettes pour lits d'hôpitaux*

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ISO 22882:2004

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## Contents

	Page
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Dimensions and characteristics</b> .....	<b>1</b>
<b>4.1 Characteristics</b> .....	<b>1</b>
<b>4.2 Dimensions</b> .....	<b>2</b>
<b>4.3 Fixing system</b> .....	<b>3</b>
<b>4.4 Load capacity</b> .....	<b>3</b>
<b>5 Requirements for testing</b> .....	<b>3</b>
<b>5.1 General</b> .....	<b>3</b>
<b>5.2 Standard conditions</b> .....	<b>3</b>
<b>5.3 Initial wheel play</b> .....	<b>4</b>
<b>5.4 Initial swivel play</b> .....	<b>4</b>
<b>5.5 Electrical resistance test</b> .....	<b>5</b>
<b>5.6 Fatigue test for locking/braking device</b> .....	<b>5</b>
<b>5.7 Efficiency check of wheel braking and/or locking device</b> .....	<b>6</b>
<b>5.8 Efficiency check of swivel braking and/or locking device</b> .....	<b>7</b>
<b>5.9 Static test</b> .....	<b>7</b>
<b>5.10 Dynamic test</b> .....	<b>8</b>
<b>5.11 Efficiency check of wheel braking and/or locking device</b> .....	<b>9</b>
<b>5.12 Efficiency check of swivel braking and/or locking device</b> .....	<b>9</b>
<b>5.13 Final wheel play</b> .....	<b>10</b>
<b>5.14 Final swivel play</b> .....	<b>10</b>
<b>6 Conformity</b> .....	<b>10</b>
<b>7 Marking of the product</b> .....	<b>10</b>
<b>7.1 Product marking</b> .....	<b>10</b>
<b>7.2 Marking of electrically conductive or antistatic castors or wheels</b> .....	<b>11</b>
<b>Bibliography</b> .....	<b>12</b>

## 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 22882 was prepared by Technical Committee ISO/TC 110, *Industrial trucks*, Subcommittee SC 3, *Castors and wheels*.

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# Castors and wheels — Requirements for castors for hospital beds

## 1 Scope

This International Standard specifies the technical requirements, the appropriate dimensions and the requirements for testing of swivel castors for hospital beds with a wheel diameter of 100 mm or more, and which have a central locking device. Swivel castors may be used with the main principal dimensions.

## 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 22877, *Castors and wheels — Vocabulary, symbols and multilingual terminology*

ISO 22878:2004, *Castors and wheels — Test methods and apparatus*

ISO 22881, *Castors and wheels — Requirements for use on manually propelled equipment for institutional applications*

ISO 22882:2004

## 3 Terms and definitions

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For the purposes of this document, the terms and definitions given in ISO 22877 apply. Symbols are given in ISO 22878:2004, Annex A.

## 4 Dimensions and characteristics

### 4.1 Characteristics

The characteristics of a castor are

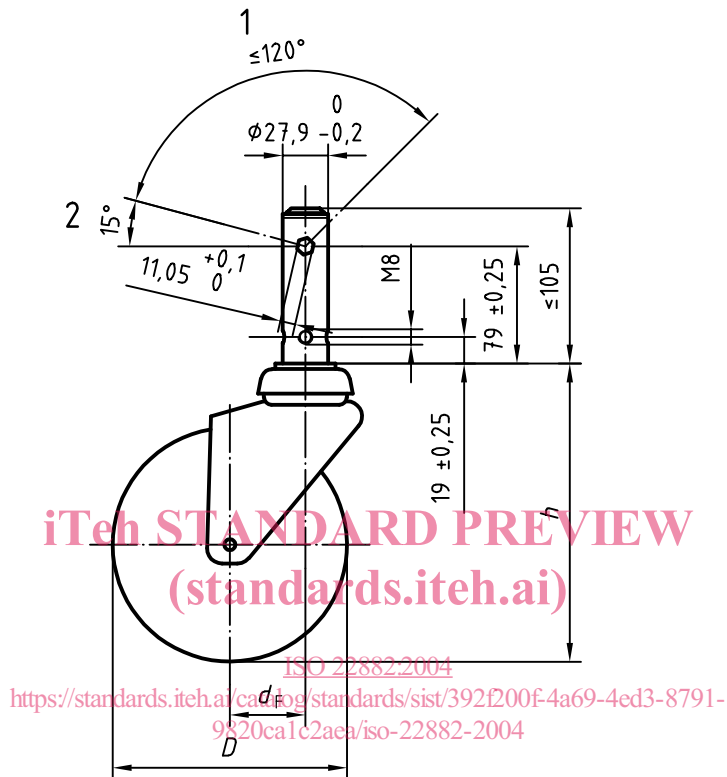
- wheel diameter,
- overall height,
- offset,
- fixing system, and
- load capacity.

4.2 Dimensions

The dimensions listed in Table 1 and shown in Figure 1 shall be used.

For dimensions of non-central locking castors used in hospital beds, refer to relevant tables in ISO 22881.

Dimensions in millimetres



- Key**
- 1 working angle
  - 2 unlocked position

Figure 1 — Principal dimensions of the central locking fixing system

Table 1

Dimensions in millimetres

Wheel diameter <sup>a</sup>	Overall height <sup>b</sup>	Offset <sup>b</sup>
<i>D</i>	<i>h</i>	<i>d<sub>F</sub></i>
100	150	46
125	175	56
150	200	65
200	250	70
250	300	80

<sup>a</sup> Tolerance ± 1 %.

<sup>b</sup> Maximum.

### 4.3 Fixing system

The principal dimensions of the fixing system with the central locking are

- stem length,
- stem diameter,
- distance of the threaded hole centre from the stem collar,
- thread size,
- distance of the hexagon hole centre from the stem collar,
- dimension of the hexagon hole, and
- working angle of the hexagon hole.

### 4.4 Load capacity

This is the maximum load, in newtons, which can be carried by a wheel or a castor so as to fully comply with the required acceptance criteria.

## 5 Requirements for testing

### 5.1 General

Test methods and apparatus shall be as specified in ISO 22878.

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### 5.2 Standard conditions

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#### 5.2.1 Environmental conditions

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Tests shall be carried out at a temperature between 15 °C and 28 °C. During the 24 h prior to the test, the samples shall remain at the specified temperature, in an environment with a relative humidity between 40 % and 70 %.

Samples shall not be artificially cooled during testing.

#### 5.2.2 Test sequence

Tests, where relevant, shall be carried out in the sequence shown in Table 2.

Table 2

Reference in this International Standard	Test sequence	Castor types	Test procedures given in ISO 22878:2004, subclause
5.3	Initial wheel play	All	4.2
5.4	Initial swivel play	Swivel castors with or without accessories	4.3
5.5	Electrical resistance	Castors antistatic or electrically conductive	4.4
5.6	Fatigue test for locking/braking devices	Castors with a central locking/braking device	4.5
5.7	Efficiency check of wheel braking and/or locking device	Castors with a central locking/braking device	4.6
5.8	Efficiency check of swivel braking and/or locking device	Castors with a central locking/braking device	4.7
5.9	Static test	All	4.9
5.10	Dynamic test	All	4.8
5.11	Efficiency check of wheel braking and/or locking device	Castors with a central locking/braking device	4.6
5.12	Efficiency check of swivel braking and/or locking device	Castors with a central locking/braking device	4.7
5.13	Final wheel play	All	4.2
5.14	Final swivel play	Swivel castors with or without accessories	4.3

5.3 Initial wheel play

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5.3.1 Test objectives, apparatus and procedures

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These shall be as specified in ISO 22878:2004, 4.2.

5.3.2 Acceptance criteria

The measured initial wheel play shall not exceed the value ( $d_{W1}$ ) given in Table 3.

Table 3

Dimensions in millimetres

Wheel diameter $D$	Maximum initial wheel play $d_{W1}$
100	0,50
125	0,62
150	0,75
200	1,00
250	1,25

5.4 Initial swivel play

5.4.1 Test objectives, apparatus and procedures

These shall be as specified in ISO 22878:2004, 4.3.



### 5.4.2 Acceptance criteria

The measured initial swivel play shall not exceed the value ( $d_{S1}$ ) given in Table 4.

**Table 4**

Symbol	Value	Description
$d_{S1}$	4 mm	maximum initial swivel play

## 5.5 Electrical resistance test

### 5.5.1 Test objectives, apparatus and procedures

These shall be as specified in ISO 22878:2004, 4.4.

### 5.5.2 Test values

The test values shall be as listed in Table 5.

**Table 5**

Symbol	Value	Description
$F_{max}$	variable	load capacity
$F_{17}$	10 % of $F_{max}$	test load
$R$	variable	electrical resistance

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### 5.5.3 Tolerances

The tolerances shall be as shown in Table 6.

**Table 6**

Symbol	Unit	Tolerance	
		Acceptable	Unit
$F_{17}$	N	+2 % 0	N

### 5.5.4 Acceptance criteria

The resistance  $R$  of the sample tested shall be

- $R \leq 10^5 \Omega$  for conductive castors or wheels, and
- $10^5 \Omega < R \leq 10^7 \Omega$  for antistatic castors or wheels.

## 5.6 Fatigue test for locking/braking device

### 5.6.1 Test objectives, apparatus and procedures

These shall be as specified in ISO 22878:2004, 4.5.