INTERNATIONAL STANDARD

**ISO 7176-26**

First edition
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# Wheelchairs —

## Part 26: **Vocabulary**

*Fauteuils roulants —*

*Partie 26: Vocabulaire*

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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 7176-26 was prepared by Technical Committee ISO/TC 173, *Assistive products for persons with disability*, Subcommittee SC 1, *Wheelchairs*.

This first edition cancels and replaces the first edition (ISO 6440:1985), all clauses and annexes of which have been technically revised.

ISO 7176 consists of the following parts, under the general title *Wheelchairs*:

— *Part 1: Determination of static stability*

— *Part 2: Determination of dynamic stability of electric wheelchairs*

— *Part 3: Determination of the effectiveness of brakes*

— *Part 4: Energy consumption of electric wheelchairs and scooters for determination of theoretical distance range*

— *Part 5: Determination of overall dimensions, mass and turning space*

— *Part 6: Determination of maximum speed, acceleration and deceleration of electric wheelchairs*

— *Part 7: Measurement of seating and wheel dimensions*

— *Part 8: Requirements and test methods for static, impact and fatigue strengths*

— *Part 9: Climatic tests for electric wheelchairs*

— *Part 10: Determination of obstacle-climbing ability of electric wheelchairs*

— *Part 11: Test dummies*

— *Part 13: Determination of coefficient of friction of test surfaces*

— *Part 14: Power and control systems for electric wheelchairs — Requirements and test methods*

— *Part 15: Requirements for information disclosure, documentation and labelling*

— *Part 16: Resistance to ignition of upholstered parts — Requirements and test methods*

— *Part 19: Wheeled mobility devices for use in motor vehicles*

— *Part 21: Requirements and test methods for electromagnetic compatibility of electrically powered wheelchairs and motorized scooters*

— *Part 22: Set-up procedures*

— *Part 23: Requirements and test methods for attendant-operated stair-climbing devices*

— *Part 24: Requirements and test methods for user-operated stair-climbing devices*

— *Part 25: Requirements and test methods for batteries and their chargers for electrically powered wheelchairs and motorized scooters*

— *Part 26: Vocabulary*

# Introduction

The provision and selection of wheelchairs and associated seating products relies on clear communication of information relating to these devices. Over time, many terms and definitions have evolved. Unfortunately, this process has resulted in a lack of clear meaning for some terms and duplication of other terms (sometimes with conflicting messages).

For example, the terms tilt and recline are sometimes used interchangeably, but usually have quite distinct meanings. If used inappropriately, an entirely inappropriate wheelchair may be specified or purchased.

The purpose of this part of ISO 7176 is to provide a collection of terms and their definitions to form the basis of clear communication across the field of wheelchair and associated seating and to eliminate confusion from duplication or inappropriate use of terms.

The vocabulary is drawn from surveys of the literature and language used by experts in this field. It excludes, however, terms which are adequately defined in the everyday language of English, medicine and technology.

ISO 7176 recognises that there are a number of terms in use which, because of duplication or inadequacies of meaning, should be replaced by terms from this vocabulary. To help people move towards a common vocabulary, these deprecated terms are included along with a reference to the preferred term.

The development and application of wheelchair standards is particularly dependent upon clear and consistent terms and definitions. Hence, a major proportion of this part of ISO 7176 includes terms and definitions used in more than one of the ISO standards specifically related to ISO Wheelchair Standards. These include the ISO 7176, ISO 10542, and ISO 16840 series, and ISO 7193. Future standards in these series will cite this document for definition of terms wherever possible, thus facilitating the consistent use of a common vocabulary.

This part of ISO 7176 is intended purely as a means of specifying terms and definitions. It does not attempt to classify wheelchairs and associated seating into any classification of device groupings as this is the purpose of ISO 9999. Annex A provides a standard set of descriptors for characterizing wheelchairs.

# Wheelchairs —

# Part 26: Vocabulary

## 1 Scope

This part of ISO 7176 specifies a vocabulary consisting of terms and definitions used in the field of manual and electrically powered wheelchairs (including scooters) and associated seating systems. This part of ISO 7176 includes, but is not limited to, the preferred terms used in two or more ISO standards of the ISO 7176, ISO 10542, and ISO 16840 series, but does not include terms considered to be adequately defined in everyday English.

NOTE 1 In addition to terms used in the three official ISO languages (English, French and Russian), this International Standard gives the equivalent terms in United States English; these are published under the responsibility of the member body/National Committee for the United States. However, only the terms and definitions given in the official languages can be considered as ISO terms and definitions.

NOTE 2 Annex A provides a standard set of descriptors for characterizing wheelchairs.

## 2 Rules and elements used in vocabulary

### 2.1 Rules used in vocabulary

Most terms defined are used in more than one of the ISO standards relating specifically to wheelchairs and seating supports. Terms used in only one of these standards, are defined in the terms and definitions clause of that standard.

Within Clause 4, terms are organized by function. Terms (and the function) can be further specified by adding an adjective as shown in 4.8.

### 2.2 Organization of elements used in the vocabulary

The structure used throughout the nomenclature is based upon ISO 10241.

## 3 Abbreviated terms

**ATD** anthropometric test device

**PSD** postural support device

**RLG** reference loader gauge

**UDIG** universal docking interface geometry

**WTORS** wheelchair-tiedown and occupant-restraint system

# 4 Terms and definitions

## 4.1 Wheelchairs and related mobility devices

### 4.1.1
**wheelchair**
device to provide wheeled mobility with a seating support system for a person with impaired mobility

NOTE A walking aid with wheels is not a wheelchair.

### 4.1.2
**manual wheelchair**
wheelchair (4.1.1) which relies on an occupant (4.2.2) or an assistant (4.2.3) to provide power for its operation

### 4.1.3
**handrim-drive wheelchair**
manual wheelchair (4.1.2) designed to be propelled and steered using handrims (4.5.11)

### 4.1.4
**lever-drive wheelchair**
manual wheelchair (4.1.2) intended to be propelled and steered by a lever or levers

### 4.1.5
**foot-propelled wheelchair**
manual wheelchair (4.1.2) designed to be propelled and steered by contact of the occupant's (4.2.2) foot or feet with the floor

### 4.1.6
**push wheelchair**
manual wheelchair (4.1.2) intended to be pushed by an assistant (4.2.3)

### 4.1.7
**aisle wheelchair**
push wheelchair (4.1.6) intended to be used in narrow aisles such as on aircraft

### 4.1.8
**electrically powered wheelchair**
e chair (deprecated)
electric wheelchair (deprecated)
powered chair (deprecated)
powered wheelchair (deprecated)
wheelchair (4.1.1) in which the motor power is derived from an integral source of electric power

NOTE A scooter (4.1.9) is an electrically powered wheelchair.

### 4.1.9
**scooter**
electrically powered wheelchair (4.1.8) with a tiller (4.4.7) to control direct steering (4.4.8)

### 4.1.10
**electrically powered wheelchair with integral seat**
electrically powered wheelchair (4.1.8) with a seating system (4.7.2) and drive system that cannot be separated

### 4.1.11
**powerbase wheelchair**
electrically powered wheelchair (4.1.8) with a powerbase (4.4.3)

### 4.1.12
**balancing wheelchair**
electrically powered wheelchair (4.1.8) that electronically maintains the balance of the wheelchair

**4.1.13**
**rigid wheelchair**
wheelchair (4.1.1) with frame components under the seat that are fixed and non-foldable

**4.1.14**
**folding wheelchair**
wheelchair (4.1.1) with frame components under the seat which can be collapsed

**4.1.15**
**shower wheelchair**
wheelchair (4.1.1) intended to be used in the shower

**4.1.16**
**toilet wheelchair**
wheelchair (4.1.1) intended to be used over a toilet

**4.1.17**
**stand-up wheelchair**
wheelchair (4.1.1) capable of transporting an occupant (4.2.2) in a seated position and which also has the capability to raise and maintain the occupant in a stand-up position

**4.1.18**
**stair-climbing device**
device intended to transport a person or an occupied wheelchair by climbing up or down stairs, but that is not fixed to the stairs

**4.1.19**
**stair-climbing chair**
stair-climbing device (4.1.18) that includes a seat for the occupant (4.2.2)

**4.1.20**
**stair-climbing wheelchair carrier**
stair-climbing device (4.1.18) that carries an occupied wheelchair

## 4.2 Wheelchair operators

**4.2.1**
**operator**
person who operates the wheelchair

NOTE Can be either the occupant or the assistant.

**4.2.2**
**occupant**
user (deprecated)
person supported by the wheelchair seating system (4.7.2)

**4.2.3**
**assistant**
attendant (deprecated)
carer (deprecated)
person, other than the occupant (4.2.2), who manoeuvres the wheelchair

## 4.3 Overall dimensions

### 4.3.1
**overall length**
distance between the most forward and most rearward points of the wheelchair when it is ready for use, measured in a direction parallel to the forward direction of movement

NOTE The measurement methods are specified in ISO 7176-5.

### 4.3.2
**overall width**
distance between the outermost side-to-side points of the wheelchair when fully opened and ready for use, measured in a direction perpendicular to the forward direction of movement

NOTE The measurement method is specified in ISO 7176-5.

### 4.3.3
**overall height**
vertical distance from the ground to the uppermost point of the wheelchair when it is ready for use with the back support (4.7.9) in the upright position

NOTE The measurement method is specified in ISO 7176-5.

### 4.3.4
**stowage length**
distance between the most forward and most rearward points of the wheelchair when folded and/or dismantled for transport or stowing purposes

NOTE The measurement method is specified in ISO 7176-5.

### 4.3.5
**stowage width**
overall width folded (deprecated)
distance between the two outermost side-to-side points of the wheelchair when folded and/or dismantled for transport or stowing purposes

NOTE The measurement method is specified in ISO 7176-5.

### 4.3.6
**stowage height**
overall height folded (deprecated)
vertical distance from the ground to the uppermost point of the wheelchair when folded and/or dismantled for transport or stowing purposes

NOTE The measurement method is specified in ISO 7176-5.

### 4.3.7
**wheelbase**
distance between the ground contact points of the front and rear wheels of the wheelchair, measured in a direction parallel to the forward direction of movement

NOTE The measurement method is specified in ISO 7176-5.

### 4.3.8
**ground clearance**
shortest distance between the ground and any part of the wheelchair that is not a wheel

NOTE The measurement method is specified in ISO 7176-5.

**4.3.9**
**turning diameter**
turning radius (deprecated)
turning circle (deprecated)
diameter of the smallest cylindrical envelope in which the occupied wheelchair can be driven in a circle through 360°

NOTE The measurement method is specified in ISO 7176-5.

**4.3.10**
**reversing width**
minimum corridor width required for the occupied wheelchair to turn through 180° where forward and backward movements of the wheelchair may be used

NOTE The measurement method is specified in ISO 7176-5.

**4.3.11**
**turning width**
minimum corridor width required for the occupied wheelchair to turn through 180° where backward movements of the wheelchair may not be used

NOTE The measurement method is specified in ISO 7176-5.

**4.3.12**
**total mass**
mass of the wheelchair when ready for use, but unoccupied

NOTE The measurement method is specified in ISO 7176-5.

## 4.4 Drive systems

**4.4.1**
**control device**
access method (deprecated)
control input device (deprecated)
input control device (deprecated)
input device (deprecated)
means by which the occupant (4.2.2) directs an electrically powered wheelchair (4.1.8) to move at the desired speed and/or in the desired direction of travel

EXAMPLE joystick

**4.4.2**
**controller**
device that converts input signals from the occupant (4.2.2) into output signals that activate powered components of the wheelchair

**4.4.3**
**powerbase**
component of an electrically powered wheelchair (4.1.8) which contains the drive system, batteries and wheels, and can be separated from the seating system (4.7.2)

**4.4.4**
**propulsion system**
combination of parts needed to propel the wheelchair

**4.4.5**
**handrim-activated power-assisted**
operated with a combination of human power and electrical power, where the activation of the electrical power is through application of a torque, displacement or force to the handrim or handrims (4.5.11)

**4.4.6**
**steering system**
combination of parts, mechanical and/or electrical, that control the direction of travel of the wheelchair

**4.4.7**
**tiller**
bar fitted to a pivot wheel(s) (4.5.4), for turning the pivot wheel(s) in steering

**4.4.8**
**direct steering**
control of direction by changing the orientation of the pivot wheel(s) (4.5.4) or pivot drive wheel(s) (4.5.5)

**4.4.9**
**manual direct steering**
direct steering (4.4.8) without powered assistance

NOTE A three-wheeled scooter (4.1.9) with a tiller (4.4.7) uses manual direct steering.

**4.4.10**
**powered direct steering**
servo steering (deprecated)
direct steering (4.4.8) with powered assistance

NOTE Typically, a secondary motor is used to adjust the orientation of the pivot wheel (4.5.4) or wheels.

**4.4.11**
**differential steering**
indirect steering (deprecated)
control of direction by applying different speed and/or direction to the manoeuvring wheels (4.5.2)

**4.4.12**
**full differential steering**
differential steering (4.4.11) where it is possible that the midpoint of the turn coincides with the centre-point of the wheelchair

NOTE The wheelchair can turn about its centre-point.

**4.4.13**
**limited differential steering**
differential steering (4.4.11) where it is not possible that the midpoint of the turn coincides with the centre-point of the wheelchair

NOTE A wheelchair with limited differential steering cannot turn about its centre-point.

**4.4.14**
**manual differential steering**
manual indirect steering (deprecated)
differential steering (4.4.11) in which the differential force is produced by the occupant (4.2.2)

NOTE A manual wheelchair (4.1.2) with handrims (4.5.11) uses manual differential steering.

**4.4.15**
**powered differential steering**
powered indirect steering (deprecated)
differential steering (4.4.11) in which the different wheel speeds are produced by two separate motors

NOTE Many electrically powered wheelchairs (4.1.8) with two drive wheels (4.5.1) use this type of steering.

**4.4.16**
**parking brake**
wheel lock (deprecated)
means of keeping the wheelchair stationary that does not require continuous force from the operator and does not require continuous power from the wheelchair

**4.4.17**
**automatic brake**
parking brake (4.4.16) that applies automatically after the wheelchair stops and/or when no power is supplied by the wheelchair

**4.4.18**
**running brake**
dynamic brake (deprecated)
friction brake (deprecated)
regenerative brake (deprecated)
service brake (deprecated)
means of stopping or slowing the wheelchair

NOTE The running brake may include one or more of the following types of brake: dynamic brake, regenerative brake and friction brake (either fail-safe or manually applied).

**4.4.19**
**push handle**
push cane (deprecated)
component designed to be grasped by the hand of an assistant (4.2.3) to propel or tip the wheelchair

**4.4.20**
**handgrip**
material covering on the push handle (4.4.19) where the hand grasps

NOTE The handgrip may be integrated with or separate from the push handle.

**4.4.21**
**anti-tip device**
anti-tipper (deprecated)
anti-tipping lever (deprecated)
device that limits the extent of tipping of a wheelchair and that may operate in forward, rearward or lateral directions of instability

**4.4.22**
**circuit protection device**
protective device that causes a circuit to open when the current and/or temperature in the device exceeds a predetermined value

EXAMPLE fuse, thermal circuit breaker

**4.4.23**
**battery pack**
removable battery compartment that contains one or more batteries

**4.4.24**
**rated capacity**
nominal capacity (deprecated)
capacity value of a battery determined under specified conditions and declared by the manufacturer

[IEC 60050-482, definition IEV 482-03-15]

**4.4.25**
**nominal voltage**
suitable approximate value of the voltage used to designate or identify a cell, a battery or an electrochemical system

[IEC 60050-482, definition IEV 482-03-31]

**4.4.26**
**on-board battery charger**
battery charger that is built into a wheelchair and cannot be removed without the use of tools

**4.4.27**
**off-board battery charger**
free-standing, self-contained battery charger separate from a wheelchair

**4.4.28**
**carry-on battery charger**
off-board battery charger (4.4.27) intended for transportation on a wheelchair

## 4.5 Wheels

**4.5.1**
**drive wheel**
wheel that transmits drive power, guides the wheelchair, but does not steer

EXAMPLE rear wheels of a rear-wheel drive scooter (4.1.9) with a pivot wheel (4.5.4) in front

**4.5.2**
**manoeuvring wheel** GB
**maneuvering wheel** US
one of a pair of wheels that are attached to the left and right side of the wheelchair, which transmits drive power, guides the wheelchair, and steers the wheelchair by rotating with different speed and/or direction

EXAMPLE wheels with handrims (4.5.11) on a manual wheelchair (4.1.2) that also has castors (4.5.6)

**4.5.3**
**guide wheel**
wheel that guides the wheelchair but does not transmit drive power and does not steer

EXAMPLE rear wheels of a front-wheel drive scooter (4.1.9) with a pivot drive wheel (4.5.5) in front are guide wheels

**4.5.4**
**pivot wheel**
wheel that steers the wheelchair by changing its orientation to the wheelchair frame, but does not transmit drive power

EXAMPLE wheel at the end of the tiller (4.4.7) of a three-wheeled scooter (4.1.9), which is driven by its two rear wheels

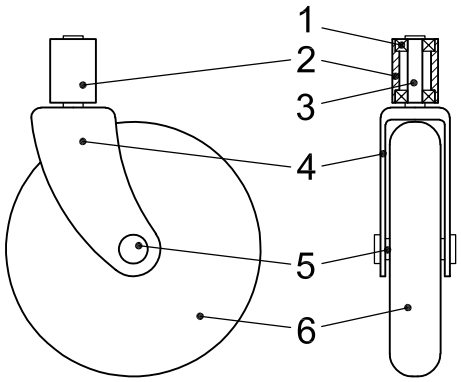
**4.5.5**
**pivot drive wheel**
wheel that transmits drive power and that steers the wheelchair by changing its angular orientation to the wheelchair frame

**4.5.6**
**castor wheel** GB
**caster wheel** US
castor GB (deprecated)
caster US (deprecated)
wheel with a horizontal axle that can swivel freely about a vertical axis

See Figure 1.

**4.5.7**
**castor assembly** GB
**caster assembly** US
combination of the castor wheel (4.5.6), castor wheel axle, castor fork (4.5.8), castor stem (4.5.9), castor stem housing (4.5.10), bearings and tyres

See Figure 1.




**Key**

1 bearing
2 castor stem housing
3 castor stem
4 castor fork
5 castor wheel axle
6 castor wheel

**Figure 1 — Castor assembly**

**4.5.8**
**castor fork** GB
**caster fork** US
castor support GB (deprecated)
caster support US (deprecated)
component of the castor assembly (4.5.7) to which the castor wheel (4.5.6) is connected

See Figure 1.

NOTE A castor fork does not necessarily have a fork design.

**4.5.9**
**castor stem** GB
**caster stem** US
shaft that the castor fork (4.5.8) is attached to which fits into the castor stem housing (4.5.10) and allows the castor fork (4.5.8), castor wheel (4.5.6), and castor wheel axle to rotate about a vertical axis

See Figure 1.

**4.5.10**
**castor stem housing** GB
**caster stem housing** US
component of the castor assembly (4.5.7) which is connected to the wheelchair frame and contains the bearings in which the castor stem (4.5.9) rotates

See Figure 1.

**4.5.11**
**handrim**
pushrim (deprecated)
outer, circular component of the manoeuvring wheel (4.5.2) intended for propelling a manual wheelchair (4.1.2) with an upper limb

## 4.6 Wheel features

### 4.6.1
**wheel diameter**
propelling wheel diameter (deprecated)
outer diameter of a wheel

NOTE The measurement method is specified in ISO 7176-7 (see propelling wheel diameter).

### 4.6.2
**handrim diameter**
outer diameter of the entire handrim (4.5.11)

NOTE 1 The measurement method is specified in ISO 7176-7.

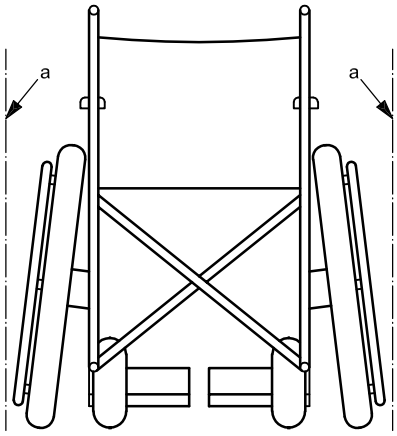
NOTE 2 The handrim diameter is not the diameter of the tubing.

### 4.6.3
**camber**
alignment of a wheel, expressed as the angle between vertical and a plane normal to the axis of the wheel

See Figure 2.

NOTE 1 Camber is negative if the top of the wheel is angled inward (see Figure 2), zero if the wheel is vertical, and positive if the top of the wheel is angled outward. Camber is usually expressed in degrees.

NOTE 2 The measurement method is specified in ISO 7176-5.




[a] Vertical.

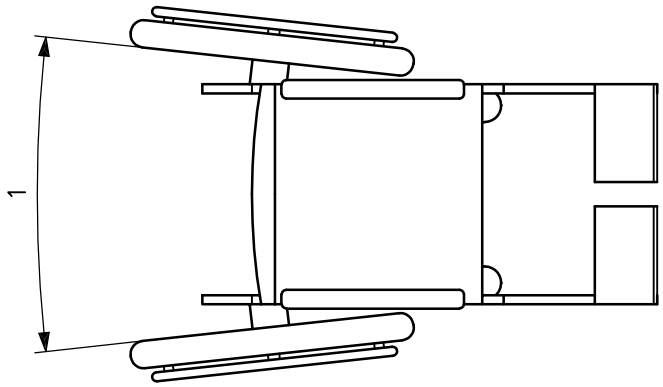
**Figure 2 — Negative camber (exaggerated, rear view)**

### 4.6.4
**toe**
toe-in (deprecated)
toe-out (deprecated)
alignment between a pair of wheels (on opposite sides of the wheelchair), expressed as the angle in the horizontal plane between planes normal to the axes of the wheels

NOTE 1 Toe is positive if the two wheels are closer at the front than at the rear (see Figure 3), zero if they are the same distance apart at the front and at the rear, and negative if they are further apart at the front than at the rear. Toe is usually expressed in degrees.

NOTE 2 The measurement method is specified in ISO 7176-5.

NOTE 3 A non-zero value of toe usually indicates a misalignment.




**Key**
1 toe

**Figure 3 — Positive toe (exaggerated, top view)**

### 4.6.5
### horizontal location of wheel axle
horizontal position of the manoeuvring wheel (4.5.2) or the drive wheel (4.5.1) relative to the seating system (4.7.2)

NOTE The measurement method is specified in ISO 7176-7.

### 4.6.6
### vertical location of wheel axle
vertical position of the manoeuvring wheel (4.5.2) or the drive wheel (4.5.1) relative to the seating system (4.7.2)

NOTE The measurement method is specified in ISO 7176-7.

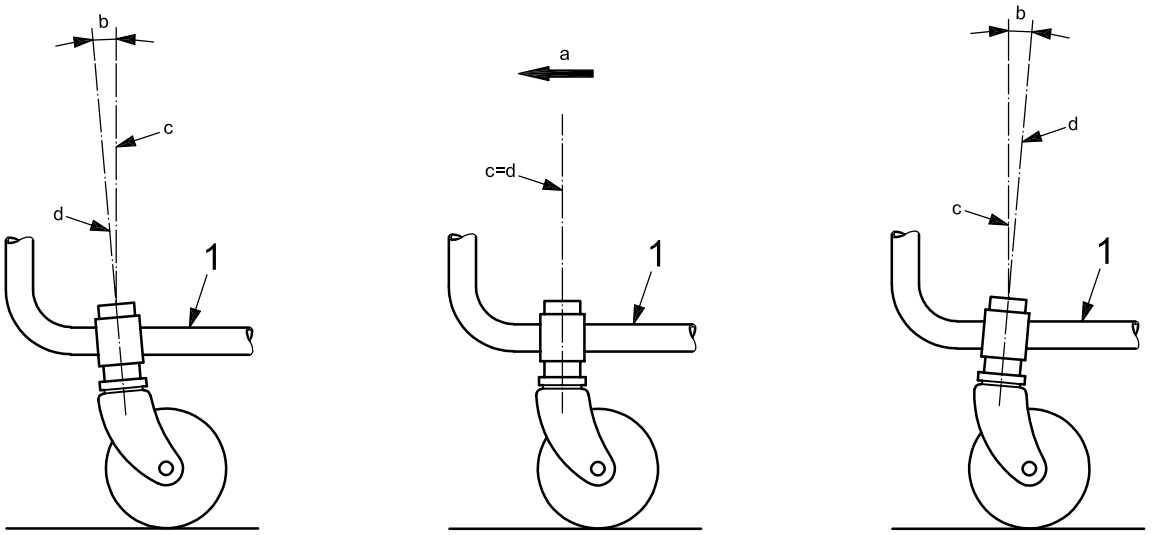
### 4.6.7
**castor rake** GB
**caster rake** US
castor stem angle GB (deprecated)
caster stem angle US (deprecated)
angle between the castor stem (4.5.9) and vertical, measured in the fore-aft direction

See Figure 4.

NOTE 1 Castor rake is positive if the top of the castor stem is in front of the bottom [see Figure 4 a)], zero if the castor stem is vertical in the fore-aft direction [see Figuer 4 b)], and negative if the top of the castor stem is behind the bottom [see Figure 4 c)]. Castor rake is usually expressed in degrees.

NOTE 2 A non-zero value of castor rake usually indicates a misalignment.

NOTE 3 The measurement method is specified in ISO 7176-5.




**a) Positive castor rake** **b) No castor rake** **c) Negative castor rake**

**Key**
1 part of wheelchair frame

a Direction of forward travel.
b Castor rake.
c Vertical.
d Castor stem axis.

**Figure 4 — Castor rake (exaggerated, side view)**

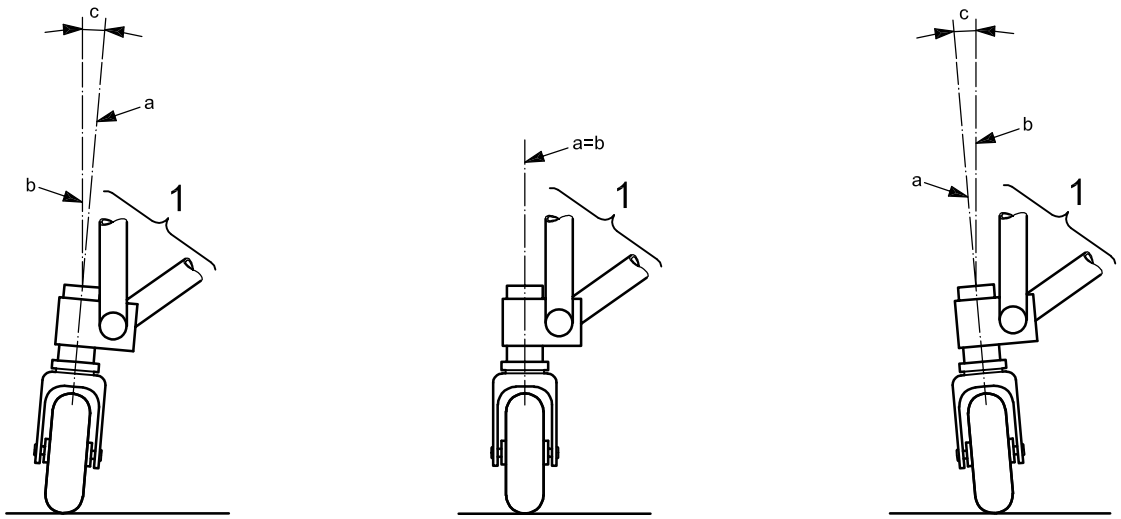
### 4.6.8
**castor cant** GB
**caster cant** US
angle between the castor stem (4.5.9) and vertical, measured in the lateral direction

See Figure 5.

NOTE 1 Castor cant is negative if the top of the castor stem is angled inwards [see Figure 5a)], zero if the castor stem is vertical in the lateral direction [see Figure 5 b)], and negative if the top of the castor stem is angled outwards [see Figure 5 c)]. Castor cant is usually expressed in degrees.

NOTE 2 A non-zero value of castor cant usually indicates a misalignment.

NOTE 3 The measurement method is specified in ISO 7176-5.




**a) Negative castor cant** **b) No castor cant** **c) Positive castor cant**

**Key**
1 part of wheelchair frame

a Castor stem axis.
b Vertical.
c Castor cant.

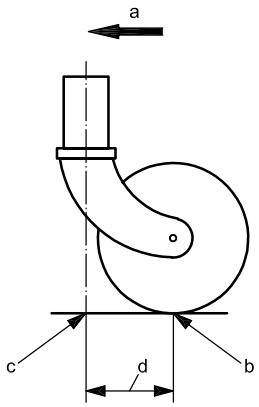
**Figure 5 — Castor cant (exaggerated, front view)**

### 4.6.9
**castor trail** GB
**caster trail** US
trail effect (deprecated)
fore-aft distance between the ground contact point of a castor wheel (4.5.6) and that point where the castor stem (4.5.9) axis intersects with the ground

See Figure 6.

NOTE 1 The measurement method is specified in ISO 7176-5.

NOTE 2 The castor trail is positive by definition in all cases.




a Direction of forward travel.
b Contact point of wheel with ground.
c Intersection point of castor stem axis with ground.
d Castor trail.

**Figure 6 — Castor trail (side view)**

**4.6.10**
**trailing position**
alignment of the castor wheel (4.5.6) relative to the wheelchair

**4.6.11**
**forward trailing position**
trailing position (4.6.10) when the wheelchair is driving straight ahead in the forward direction

See Figure 7.

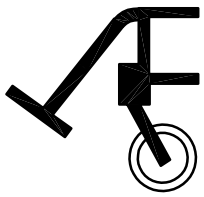


**Figure 7 — Forward trailing position**

**4.6.12**
**rearward trailing position**
trailing position (4.6.10) when the wheelchair is driving straight backwards

See Figure 8.

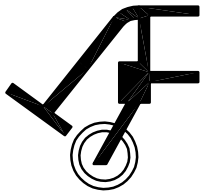
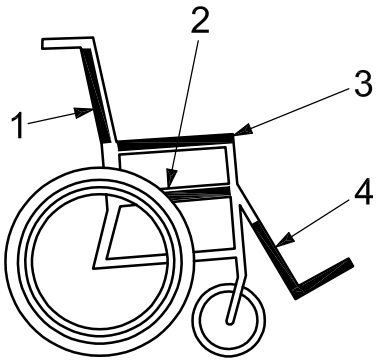


**Figure 8 — Rearward trailing position**

## 4.7 Postural supports

**4.7.1**
**body support system**
those parts of the wheelchair which directly support or contain the body of the occupant (4.2.2) including the seat (4.7.8), back support (4.7.9), arm support (4.7.13), and lower leg support assembly (4.7.12)

See Figure 9.




**Key**
1 back support
2 seat
3 arm support
4 lower leg support assembly

**Figure 9 — Body support system**

**4.7.2**
**seating system**
seat (4.7.8) and back support (4.7.9) surfaces and their attachment hardware, plus those accessories deemed necessary

**4.7.3**
**postural support device**
**PSD**
postural support (deprecated)
structure, attached to a wheelchair, which has a surface that contacts the occupant's (4.2.2) body and is used to either modify or accommodate the occupant's sitting posture

EXAMPLE seat (4.7.8), back support (4.7.9), lateral support (4.7.26), head support (4.7.14)

**4.7.4**
**integrated postural support device**
**integrated PSD**
non-removable postural support device (4.7.3) built into the structure of the wheelchair

**4.7.5**
**postural support device unit**
**PSD unit**
PSD structure [seat (4.7.8) and back support (4.7.9)] joined together, not intended to be used as separate components

**4.7.6**
**postural support device component**
**PSD component**
individual structure (piece) which may be added to the wheelchair or postural support device (4.7.3) to increase the support being provided

**4.7.7**
**support surface**
part of the postural support device (4.7.3) that is intended to contact the wheelchair occupant (4.2.2)

**4.7.8**
**seat**
seat bottom (deprecated)
seat support (deprecated)
postural support device (4.7.3) intended to support the inferior surface of the buttocks and thighs

**4.7.9**
**back support**
back (deprecated)
backrest (deprecated)
seat back (deprecated)
postural support device (4.7.3) intended to support the posterior surface of the sacral, lumbar and/or thoracic segments of the trunk

**4.7.10**
**foot support**
foot board (deprecated)
foot box (deprecated)
foot bucket (deprecated)
foot platform (deprecated)
footplate (deprecated)
footrest (deprecated)
postural support device (4.7.3) intended to support the foot

**4.7.11**
**lower leg support**
postural support device (4.7.3) intended to support the lower leg

**4.7.12**
**lower leg support assembly**
footrest assembly (deprecated)
front rigging (deprecated)
hanger (deprecated)
legrest (deprecated)
legrest assembly (deprecated)
combination of the lower leg support (4.7.11) and foot support (4.7.10) and their attachment hardware

**4.7.13**
**arm support**
arm trough (deprecated)
armrest (deprecated)
postural support device (4.7.3) intended to support the lower arm

**4.7.14**
**head support**
headrest (deprecated)
neck ring (deprecated)
occipital ring (deprecated)
postural support device (4.7.3) intended to support the head

**4.7.15**
**seat cushion**
pad (deprecated)
separate, removable postural support device (4.7.3) intended to support the inferior surface of the buttocks and thighs

**4.7.16**
**sling seat**
seat (4.7.8) consisting of flexible material(s)

**4.7.17**
**solid seat**
seat (4.7.8) with a rigid surface that may or may not be covered by a cushioned material

**4.7.18**
**inclined seat**
seat dump (deprecated)
sloping seat (deprecated)
wedge seat (deprecated)
seat (4.7.8) that is angled in the fore-aft direction

NOTE Seat inclination is positive if the front of the seat surface is higher than the back of the seat surface, and negative if the front of the seat surface is lower than the back of the seat surface.

**4.7.19**
**anti-thrust seat**
seat (4.7.8) intended to inhibit forward movement of the ischial tuberosities

**4.7.20**
**solid seat insert**
solid insert (deprecated)
rigid seat insert (deprecated)
rigidizer (deprecated)
sag compensator (deprecated)
additional, removable support structure inserted below the seat cushion (4.7.15) which is used without removing the sling seat (4.7.16)

**4.7.21**
**sling back**
back support (4.7.9) consisting of flexible material(s)

### 4.7.22
### solid back support
back support (4.7.9) with a rigid surface that may or may not be covered by a cushioned material

### 4.7.23
### anterior support
postural support device (4.7.3) intended to contact the anterior surface of a body segment

See Figure 10 for examples 4, 5 and 6.

EXAMPLE 1 anterior head support
anterior head strap (deprecated)
forehead strap (deprecated)
forehead support (deprecated)
headband (deprecated)

EXAMPLE 2 anterior shoulder support
backpack straps (deprecated)
shoulder bar (deprecated)
shoulder hook (deprecated)
shoulder retractor (deprecated)
shoulder strap (deprecated)

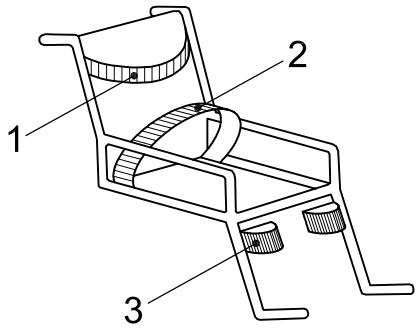
EXAMPLE 3 anterior upper arm support
humeral strap (deprecated)

EXAMPLE 4 anterior trunk support
anterior thoracic support (deprecated)
butterfly strap (deprecated)
butterfly harness (deprecated)
chest harness (deprecated)
chest strap (deprecated)
H-strap (deprecated)
harness (deprecated)
spiderman strap (deprecated)

EXAMPLE 5 anterior pelvic support
lap belt (deprecated)
pelvic stabilizer (deprecated)
pelvic strap (deprecated)
seat belt (deprecated)
subasis bar (deprecated)

EXAMPLE 6 anterior lower leg support
knee block (deprecated)
knee strap (deprecated)

NOTE Anterior supports can be flexible or rigid.




**Key**

1 anterior trunk support
2 anterior pelvic support
3 anterior lower leg support

**Figure 10 — Examples of anterior supports**

### 4.7.24
### posterior support

postural support device (4.7.3) intended to contact the posterior surface of a body segment

See Figure 11 for examples 3, 5 and 6.

EXAMPLE 1 posterior head support

EXAMPLE 2 posterior upper arm support
elbow block (deprecated)
humeral block (deprecated)
protractor (deprecated)

EXAMPLE 3 posterior lumbar support
lumbar pad (deprecated)
lumbar roll (deprecated)

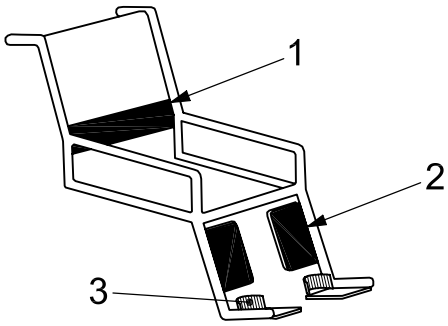
EXAMPLE 4 posterior sacral support
posterior pelvic support (deprecated)

EXAMPLE 5 posterior lower leg support
calf pad (deprecated)
calf panel (deprecated)
calf strap (deprecated)
calf support (deprecated)
leg strap (deprecated)
leg support (deprecated)
legrest pad (deprecated)
lower leg support (deprecated)
posterior leg support (deprecated)

NOTE 1 In this case, the term “lower leg support” is deprecated as a synonym for “posterior lower leg support.”

EXAMPLE 6 posterior foot support
heel cup (deprecated)
heel loop (deprecated)
heel strap (deprecated)

NOTE 2 Posterior supports can be flexible or rigid.




**Key**

1 posterior lumbar support
2 posterior lower leg support
3 posterior foot support

**Figure 11 — Examples of posterior supports**

### 4.7.25
### medial support

postural support device (4.7.3) intended to contact the medial surface of a body segment

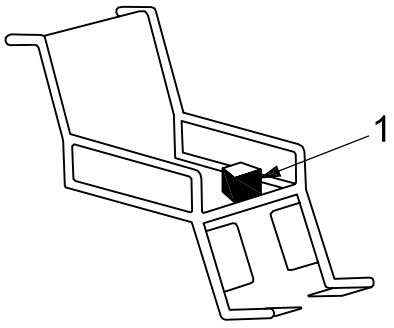
See Figure 12 for example 1.

EXAMPLE 1 medial upper leg support
adduction strap (deprecated)
adductor pad (deprecated)
adductor wedge (deprecated)
leg adductor support (deprecated)
leg dividing support (deprecated)
wedge (deprecated)
wedge pad (deprecated)

EXAMPLE 2 medial knee support
pommel (deprecated)

EXAMPLE 3 medial lower leg support

NOTE Medial supports can be flexible or rigid.




**Key**

1 medial upper leg support

**Figure 12 — Example of a medial support**

### 4.7.26
### lateral support
postural support device (4.7.3) intended to contact the lateral surface of a body segment

See Figure 13 for examples 1, 3 and 5.

EXAMPLE 1 lateral head support
head side support (deprecated)
lateral headrest (deprecated)

EXAMPLE 2 lateral upper arm support
humeral block (deprecated)
protractor (deprecated)

EXAMPLE 3 lateral trunk support
body side support (deprecated)
lateral (deprecated)
lateral support (deprecated)
lateral pad (deprecated)
lateral thoracic pad (deprecated)
lateral thoracic support (deprecated)
scoliosis pad (deprecated)
side cushion (deprecated)
trunk pad (deprecated)

NOTE 1 In this case, the term “lateral support” is deprecated as a synomym for “lateral trunk support.”

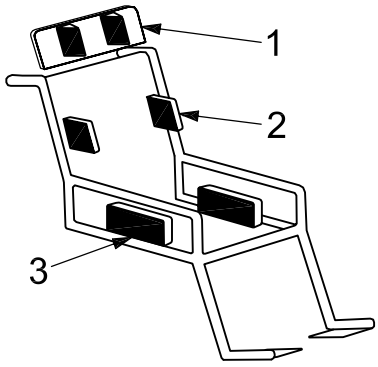
EXAMPLE 4 lateral pelvic support
hip block (deprecated)
hip guide (deprecated)
hip pad (deprecated)
lateral hip support (deprecated)

EXAMPLE 5 lateral upper leg support
adductor pad (deprecated)
adductor wedge (deprecated)
lateral thigh support (deprecated)
leg block (deprecated)
leg pad (deprecated)
leg strap (deprecated)
thigh block (deprecated)
thigh strap (deprecated)

EXAMPLE 6 lateral knee support
adductor pad (deprecated)
adductor strap (deprecated)

EXAMPLE 7 lateral lower leg support
calf strap (deprecated)
calf support (deprecated)
leg block (deprecated)
leg guide (deprecated)
leg pad (deprecated)
leg strap (deprecated)
legrest pad (deprecated)

NOTE 2 Lateral supports can be flexible or rigid.




**Key**

1 lateral head support
2 lateral trunk support
3 lateral upper leg support

**Figure 13 — Examples of lateral supports**

### 4.7.27
### superior support

postural support device (4.7.3) intended to contact the superior surface of a body segment

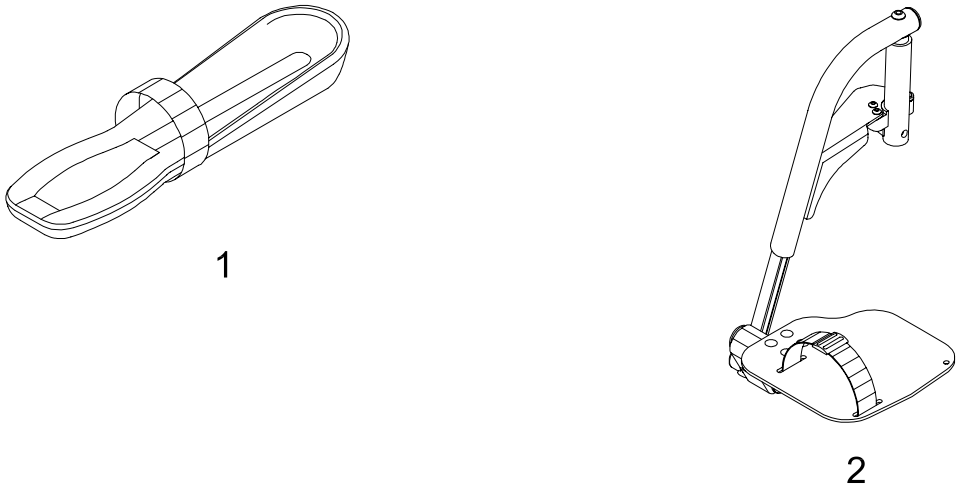
See Figure 14 for examples 1 and 3.

EXAMPLE 1 superior lower arm support
forearm hook (deprecated)
forearm strap (deprecated)

EXAMPLE 2 superior upper leg support
leg strap (deprecated)
thigh strap (deprecated)

EXAMPLE 3 superior foot support
toe cup (deprecated)
toe loop (deprecated)

NOTE Superior supports can be flexible or rigid.




**Key**

1 superior lower arm support
2 superior foot support

**Figure 14 — Examples of superior supports**

### 4.7.28
### inferior support
postural support device (4.7.3) intended to contact the inferior surface of a body segment

NOTE 1 An inferior support usually applies to the buttocks and thighs, and is used with or as part of a seat cushion.

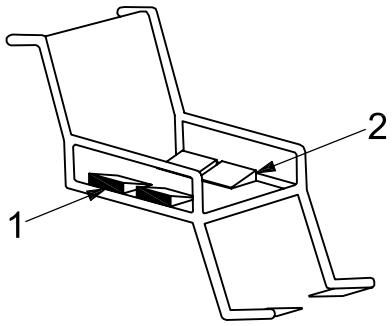
See Figure 15 for examples 1 and 2.

EXAMPLE 1 inferior pelvic support
obliquity pad (deprecated)

EXAMPLE 2 inferior upper leg support
thigh wedge (deprecated)

EXAMPLE 3 inferior lower leg support
stump support (deprecated)

NOTE 2 Inferior supports can be flexible or rigid.




Key
1 inferior pelvic support
2 inferior upper leg support

**Figure 15 — Examples of inferior supports**

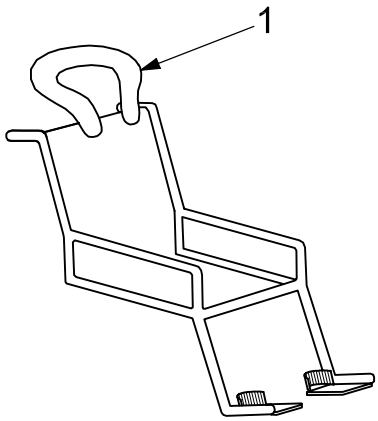
### 4.7.29
### circumferential support
postural support device (4.7.3) which supports a body segment on at least three sides from at least three directions

See Figures 16 and 17 for examples.

EXAMPLE 1 circumferential neck support
cervical collar (deprecated)
circumferential cervical support (deprecated)
collar (deprecated)

EXAMPLE 2 circumferential ankle support
ankle strap (deprecated)

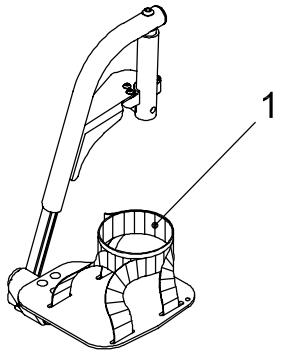
NOTE Circumferential supports can be flexible or rigid.




**Key**

1 circumferential neck support

**Figure 16 — Example of circumferential neck support**




**Key**

1 circumferential ankle support

**Figure 17 — Example of circumferential ankle support**

### 4.7.30
### clothing guard
arm support panel (deprecated)
armrest panel (deprecated)
skirt guard (deprecated)
component that provides a barrier between the occupant (4.2.2) and the wheel

## 4.8 Postural support characteristics

### 4.8.1
### recline
change of the back support angle (4.9.24) from an upright sitting position toward a supine position without moving the seat

### 4.8.2
### tilt
tilt-in-space (deprecated)
change of the seating orientation in the sagittal plane while maintaining the seat to back support angle (4.9.25)

See Figure 18.

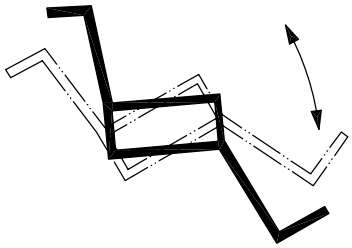


**Figure 18 — Tilt**

**4.8.3**
**fixed**
intended not to be moved, detached or adjusted

**4.8.4**
**occupant adjustable**
user adjustable (deprecated)
intended to be adjusted, moved or set up by the occupant (4.2.2) without the use of tools

**4.8.5**
**assistant adjustable**
intended to be adjusted, moved or set up by the assistant (4.2.3) without the use of tools

**4.8.6**
**tool adjustable**
intended to be adjusted, moved or set up with the use of tools

**4.8.7**
**angle adjustable**
intended to be repositioned by pivoting to a different functional position

See Figures 19 and 20 for examples.

EXAMPLE 1 angle adjustable back support

EXAMPLE 2 angle adjustable lateral support

EXAMPLE 3 angle adjustable seat

EXAMPLE 4 angle adjustable lower leg support assembly
angle adjustable hanger bracket (deprecated)

EXAMPLE 5 angle adjustable foot support

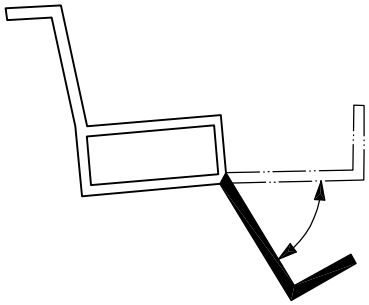


**Figure 19 — Angle adjustable lower leg support assembly**

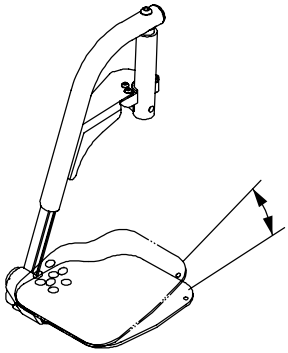


**Figure 20 — Angle adjustable foot support**

### 4.8.8
### flip-up
intended to be rotated upward out of position without the use of tools, while remaining attached to the wheelchair

See Figure 21 for an example.

EXAMPLE flip-up foot support

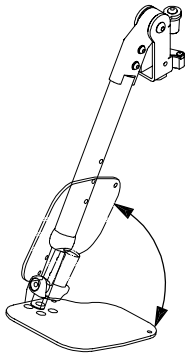


**Figure 21 — Flip-up foot support**

### 4.8.9
### swing-away
intended to be moved into and out of position without the use of tools while remaining attached to the wheelchair

See Figure 22 for examples.

EXAMPLE 1 swing-away arm support

EXAMPLE 2 swing-away lateral support

EXAMPLE 3 swing-away medial upper leg support

EXAMPLE 4 swing-away lower leg support assembly
swing-away hanger bracket (deprecated)

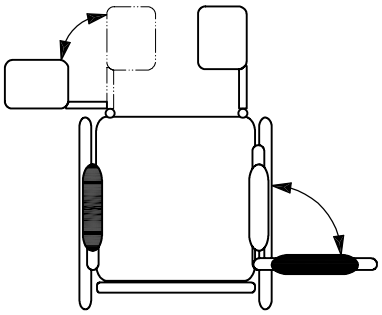


**Figure 22 — Swing-away lower leg support assembly and arm support**

**4.8.10**
**removable**
detachable (deprecated)
capable of being detached without the use of tools

EXAMPLE 1 removable arm support

EXAMPLE 2 removable lower leg support assembly

EXAMPLE 3 removable wheel

**4.8.11**
**modular**
composed of standardized units or sections for easy construction or arrangement

NOTE The term is used to describe a postural support device (4.7.3) or wheelchair.

**4.8.12**
**pre-contoured**
contoured (deprecated)
generically shaped, curved, not planar

**4.8.13**
**custom contoured**
molded (deprecated)
uniquely shaped to match the wheelchair occupant (4.2.2)

**4.8.14**
**tension adjustable**
intended to allow adjustment to create a contoured surface

**4.8.15**
**bottomed out**
state of cushion deformation at which no increase in cushion deformation occurs when further loading is applied

## 4.9 Seating dimensions

**4.9.1**
**seat reference plane**
imaginary plane, used for making measurements, which is associated with the seat (4.7.8) of the wheelchair

NOTE The method for determining the location of this reference plane is specified in ISO 7176-7.

**4.9.2**
**back support reference plane**
backrest reference plane (deprecated)
imaginary plane, used for making measurements, that is associated with the back support (4.7.9) of the wheelchair

NOTE The method for determining the location of this reference plane is specified in ISO 7176-7.

**4.9.3**
**leg reference plane**
imaginary plane, used for making measurements, which is associated with the foot support (4.7.10) and either the seat (4.7.8) or the lower leg support (4.7.11)

NOTE The method for determining the location of this reference plane is specified in ISO 7176-7.

**4.9.4**
**seat reference point**
imaginary point, used for making measurements, that is the midpoint of the intersection of the seat reference plane (4.9.1) and the back support reference plane (4.9.2)

**4.9.5**
**seat width**
distance between the outermost parts of the seat (4.7.8)

NOTE The measurement method is specified in ISO 7176-7.

**4.9.6**
**effective seat width**
distance between the lateral support surfaces (4.7.7) (e.g., arm supports, lateral pelvic supports) that limit the space at the occupant's (4.2.2) hips

NOTE The measurement method is specified in ISO 7176-7.

**4.9.7**
**seat depth**
distance between the most forward and most rearward points of the seat (4.7.8)

**4.9.8**
**effective seat depth**
distance between the most forward point of the seat (4.7.8) and the back support (4.7.9) surface

NOTE The measurement method is specified in ISO 7176-7.

**4.9.9**
**seat surface height at front edge**
seat height (deprecated)
height of the seat (4.7.8) above the floor

NOTE The measurement method is specified in ISO 7176-7.

**4.9.10**
**back support width**
backrest width (deprecated)
distance between the outermost parts of the back support (4.7.9)

NOTE The measurement method is specified in ISO 7176-7.

**4.9.11**
**back support height**
backrest height (deprecated)
distance between the seat (4.7.8) and the uppermost point of the back support (4.7.9)

NOTE The measurement method is specified in ISO 7176-7.

### 4.9.12
**foot support length**
footrest length (deprecated)
length of the foot support (4.7.10)

NOTE The measurement method is specified in ISO 7176-7.

### 4.9.13
**foot support to seat**
footrest to seat (deprecated)
distance between the foot support (4.7.10) and the seat (4.7.8)

NOTE The measurement method is specified in ISO 7176-7.

### 4.9.14
**foot support clearance**
footrest clearance (deprecated)
height of the clear space under the lowest part of the foot support (4.7.10)

NOTE The measurement method is specified in ISO 7176-7.

### 4.9.15
**arm support length**
armrest length (deprecated)
length of the support surface (4.7.7) of the arm support (4.7.13)

NOTE The measurement method is specified in ISO 7176-7.

### 4.9.16
**arm support width**
armrest width (deprecated)
width of the support surface (4.7.7) of the arm support (4.7.13)

NOTE The measurement method is specified in ISO 7176-7.

### 4.9.17
**arm support height**
armrest height (deprecated)
height of the arm support (4.7.13) with reference to the seat (4.7.8)

NOTE The measurement method is specified in ISO 7176-7.

### 4.9.18
**front of arm support to back support**
front of armrest to backrest (deprecated)
distance between the front of the support surface of the arm support (4.7.13) and the back support (4.7.9)

NOTE The measurement method is specified in ISO 7176-7.

### 4.9.19
**front location of arm support structure**
front location of armrest structure (deprecated)
horizontal distance between the front of the arm support (4.7.13) structure and the back support (4.7.9), at a specific height above the floor

NOTE The measurement method is specified in ISO 7176-7.

### 4.9.20
**distance between arm supports**
distance between armrests (deprecated)
horizontal distance between the innermost parts of the two arm supports (4.7.13)

NOTE The measurement method is specified in ISO 7176-7.

**4.9.21**
**head support height above seat**
headrest height above seat (deprecated)
vertical position of the head support (4.7.14) with reference to the seat (4.7.8)

NOTE 1 The measurement method is specified in ISO 7176-7.

NOTE 2 The measurement corresponds to the head height of the occupant (4.2.2).

**4.9.22**
**head support in front of back support**
headrest in front of backrest (deprecated)
horizontal position of the head support (4.7.14) with reference to the back support (4.7.9)

NOTE The measurement method is specified in ISO 7176-7.

**4.9.23**
**seat plane angle**
seat angle (deprecated)
angle of the seat reference plane (4.9.1) with reference to a horizontal plane

NOTE The measurement method is specified in ISO 7176-7.

**4.9.24**
**back support angle**
back angle (deprecated)
backrest angle (deprecated)
angle of the back support reference plane (4.9.2) with reference to a vertical plane

NOTE The measurement method is specified in ISO 7176-7.

**4.9.25**
**seat to back support angle**
seat to backrest angle (deprecated)
back support angle (4.9.24) plus 90 degrees minus the seat plane angle (4.9.23)

**4.9.26**
**leg to seat surface angle**
angle between the leg reference plane (4.9.3) and the seat reference plane (4.9.1)

NOTE The measurement method is specified in ISO 7176-7.

**4.9.27**
**foot support to leg angle**
footrest to leg angle (deprecated)
angle between the foot support (4.7.10) and the leg reference plane (4.9.3)

NOTE The measurement method is specified in ISO 7176-7.

**4.9.28**
**arm support angle**
armrest angle (deprecated)
angle of the support surface (4.7.7) of the arm support (4.7.13) with reference to the horizontal

NOTE The measurement method is specified in ISO 7176-7.

## 4.10 Testing equipment and configuration

**4.10.1**
**maximum occupant mass**
maximum user mass (deprecated)
maximum mass of the occupant (4.2.2) specified by the wheelchair manufacturer

### 4.10.2
### reference plane
nominal plane specified by a measurement standard to ensure comparability of results

### 4.10.3
### wheelchair ground plane
plane representing the surface on which the wheelchair rests

See Figure 23.

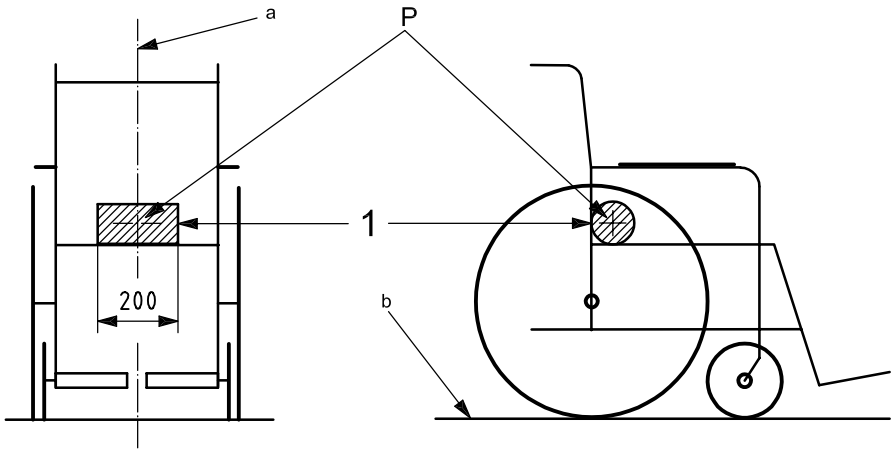
### 4.10.4
### wheelchair reference plane
vertical plane in the longitudinal centreline of the wheelchair

See Figure 23.

### 4.10.5
### point P
reference point that lies at the cross-sectional centre of a 100 mm diameter, 200 mm long, lightweight (max. 0,5 kg) cylinder positioned with the longitudinal axis perpendicular to the wheelchair reference plane (4.10.4), such that the curved surface of the cylinder contacts with the back support (4.7.9) and the upper surface of the seat (4.7.8)

See Figure 23.

Dimensions in millimetres




**Key**
1 cylinder, diameter 100 mm

a Wheelchair reference plane.
b Wheelchair ground plane.

**Figure 23 — Wheelchair reference point P and wheelchair reference plane**

### 4.10.6
### wheelchair footprint
space outlined on the horizontal wheelchair ground plane (4.10.3) by projecting vertically down from the outermost edges of the structural members that comprise the mobile base and seat (4.7.8) of the wheelchair

### 4.10.7
### reference configuration
set-up for adjustable wheelchairs, produced by a standard procedure of adjustment to ensure comparability of results between wheelchairs

**4.10.8**
**test dummy**
device used to load the wheelchair during testing

NOTE The specifications and construction details are contained in ISO 7176-11.

**4.10.9**
**reference loader gauge**
**RLG**
test device used to load the wheelchair and form a basis from which to make measurements

NOTE The specifications and construction details are contained in ISO 7176-7.

**4.10.10**
**anthropometric test device**
**ATD**
articulated physical analogue of the human body used to represent a wheelchair occupant (4.2.2) in a test

NOTE The specifications for this device are contained in ISO 10542-1.

**4.10.11**
**H-point**
point located on the left and right sides of the pelvic region of an anthropometric test device (4.10.10) which represents the approximate locations of the human hip joint centres in the side views, as specified by the ATD manufacturer

**4.10.12**
**drop test machine**
test fixture designed to simulate the effect of descending a curb while riding in a wheelchair

NOTE The specifications for this test fixture are contained in ISO 7176-8.

**4.10.13**
**two-drum test machine**
test fixture designed to test the durability of a wheelchair

NOTE The specifications for this test fixture are contained in ISO 7176-8.

**4.10.14**
**cushion loading indenter**
apparatus that is used to apply indentation forces to a seat cushion (4.7.15) to determine its support characteristics

NOTE The specifications for this apparatus are contained in ISO 16840-2. Additional indenters may be specified in other parts of 16840 still under development.

## 4.11 Transportation in a motor vehicle

**4.11.1**
**wheelchair-tiedown and occupant-restraint system**
**WTORS**
complete restraint system for wheelchair-seated occupants (4.2.2) comprised of equipment for wheelchair tiedown (4.11.4) and a belt-type occupant restraint (4.11.16)

**4.11.2**
**forward-facing**
orientation in which the wheelchair-seated occupant (4.2.2) faces the front of the vehicle with the wheelchair reference plane (4.10.4) within ten degrees of the longitudinal axis of the vehicle

**4.11.3**
**rearward-facing**
orientation in which the wheelchair-seated occupant (4.2.2) faces the back of the vehicle with the wheelchair reference plane (4.10.4) within ten degrees of the longitudinal axis of the vehicle

**4.11.4**
**wheelchair tiedown**
**wheelchair securement**
device or system designed to secure a forward-facing (4.11.2) wheelchair in place in a motor vehicle

NOTE The term wheelchair tiedown refers primarily to systems that use straps. The term wheelchair securement refers primarily to systems in which the wheelchair is secured by a docking-type system that does not require the use of straps or other manually operated devices.

**4.11.5**
**four-point tiedown**
wheelchair tiedown (4.11.4) system that attaches to the wheelchair frame at four separate securement points (4.11.15) and also attaches to the vehicle at four separate anchor points (4.11.13)

**4.11.6**
**four-point strap-type tiedown**
four-point tiedown (4.11.5) that uses four strap assemblies to secure the wheelchair in the vehicle

**4.11.7**
**clamp-type tiedown**
method of wheelchair tiedown (4.11.4) that uses mechanical linkages and/or grips that require manual positioning of the end-fittings on the wheelchair

NOTE Tightening of the tiedown on the wheelchair may be either by manual effort or by an external power source that is operated by an electrical switch.

**4.11.8**
**docking-type tiedown**
method of wheelchair tiedown (4.11.4) by which portions of the wheelchair structure, or add-on components fastened to the wheelchair, align, mate and engage with a docking tiedown device fastened to the vehicle, upon manoeuvring of the wheelchair into position in the vehicle

NOTE Securement of the wheelchair can occur automatically during wheelchair engagement, or could require manual intervention through operation of a mechanical lever or electrical switch. Release of the wheelchair will usually require operation of a mechanical lever or electrical switch.

**4.11.9**
**docking tiedown device**
**docking securement device**
assembly of fixtures and components designed for installation in motor vehicles for the purpose of securing a wheelchair by engaging with, and locking on to, securement points (4.11.15) on the wheelchair frame or on wheelchair securement adaptors (4.11.12) attached to the wheelchair frame

**4.11.10**
**universal docking interface geometry**
**UDIG**
specifications for the size, shape, and location of wheelchair securement points (4.11.15), including surrounding clear zones, intended for use with a variety of docking tiedown devices (4.11.9) installed in a wide range of vehicles

**4.11.11**
**strap**
length of webbing material used in a wheelchair tiedown (4.11.4)

**4.11.12**
**wheelchair tiedown adaptor**
**wheelchair securement adaptor**
hardware that is attached temporarily or permanently to the wheelchair frame to accommodate wheelchair securement by a wheelchair tiedown (4.11.4) device

**4.11.13**
**anchor point**
point (area) on a vehicle interior component, floor, or wall, or wheelchair, or wheelchair tiedown (4.11.4), to which an anchorage (4.11.14) is attached

**4.11.14**
**anchorage**
assembly of components and fittings by which loads are transferred directly from the wheelchair tiedown (4.11.4) to the vehicle, or from the occupant restraint (4.11.16) to the vehicle, or wheelchair, or wheelchair tiedown (4.11.4), or vehicle interior component

**4.11.15**
**securement points**
points on the wheelchair to which wheelchair tiedowns (4.11.4) are connected

**4.11.16**
**occupant restraint**
system or device intended to restrain a motor-vehicle occupant during an impact in order to prevent ejection, and prevent or minimize contact with the vehicle interior components and other occupants

NOTE Securement points (4.11.15) may be located on hardware components that are permanently or temporarily fastened to the wheelchair.

**4.11.17**
**three-point belt**
three-point restraint (deprecated)
occupant-restraint (4.11.16) assembly comprised of both a pelvic belt (4.11.19) and a shoulder belt (4.11.18) that connect together near the hip of the occupant

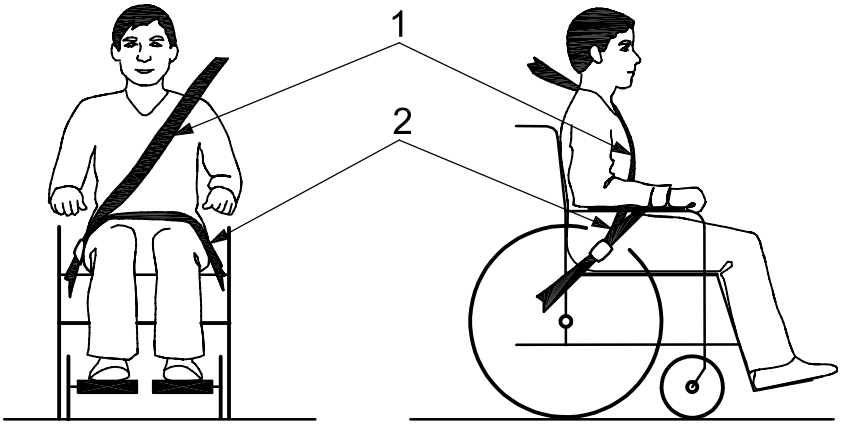
See Figure 24.

**4.11.18**
**shoulder belt**
upper torso restraint (deprecated)
portion of the occupant restraint (4.11.16) intended to limit movement of the chest and head by application of restraint forces to the shoulders and chest

See Figure 24.

**4.11.19**
**pelvic belt**
**lap belt**
lap restraint (deprecated)
pelvic restraint (deprecated)
belt (4.11.22) restraint assembly intended to limit movement of the pelvis

See Figure 24.




**Key**
1 shoulder belt
2 pelvic belt

**Figure 24 — Three-point belt consisting of pelvic and shoulder belts connected near hip of occupant**

**4.11.20**
**head restraint**
device intended to limit rearward displacement of the wheelchair occupant's (4.2.2) head

**4.11.21**
**restraint harness**
occupant-restraint (4.11.16) assembly consisting of at least one belt (4.11.22) designed to provide pelvic restraint and two belts that restrain the upper torso by applying forces to both shoulders

**4.11.22**
**belt**
length of webbing material used as part of an occupant restraint (4.11.16) or postural support device (4.7.3)

**4.11.23**
**airbag**
inflatable restraint system (deprecated)
supplemental occupant-restraint (4.11.16) system, consisting primarily of a sensor or sensors, diagnostics, inflator(s), and module(s), which inflates a bag in certain types of vehicle crashes to assist in preventing the occupant(s) (4.2.2) from impacting the interior portions of the vehicle

## 4.12 Product information

**4.12.1**
**test report**
standardized report that has been developed to facilitate the collection and reporting of test performance or measurements

**4.12.2**
**specification sheet**
manufacturer's pre-sale literature that gives wheelchair performance information

**4.12.3**
**operator's manual**
user manual (deprecated)
post-sale information provided with the wheelchair to inform the operator about the assembly, operation, maintenance, repair and warranty aspects of wheelchair ownership

NOTE The information required for disclosure in the operator's manual is specified in ISO 7176-15.

**4.12.4**
**service manual**
documentation giving detailed information on repair and maintenance procedures, usually provided to specialist service facilities

# Annex A
(informative)

# Characterization of wheelchairs

ISO 9999 establishes a classification of technical aids for persons with disabilities and attempts to include a class for wheelchairs. However, with the variety of wheelchairs and features available and the advancement of technology, it is not possible to classify wheelchairs into a reasonable number of discrete classes.

Wheelchairs can be generally characterized with the following descriptors:

Operator

- occupant-operated
- assistant-operated

Frame

- rigid
- folding

Environment

- indoor
- outdoor
- shower
- toilet
- stair-climbing
- aircraft

Propulsion

- manual
  - handrim driven
  - push/transport
  - lever driven
- manual, power assisted
  - electrically powered
  - combustion powered

Steering

- method
  - manual steering
  - manual, power assisted
  - powered steering
- type
  - direct
  - differential

Posture

- sitting position
- standing position
- lying position

Seating Orientation

fixed
adjustable
recline
tilt

EXAMPLE There are many detailed ways in which wheelchairs can be characterized. Following are two examples of how the descriptors above can be used to characterize different types of wheelchair:

a) occupant-operated, standard manual wheelchair with manual steering, which accommodates an occupant in a sitting position and has fixed seating orientation;

b) occupant-operated, standard electrically powered wheelchair with powered steering, which accommodates an occupant in a sitting position and has recline and tilt seating orientation.

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# Alphabetical index

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