BRITISH STANDARD

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1907:2005

Safety requirements for cableway installations designed to carry persons — Terminology

The European Standard EN 1907:2005 has the status of a British Standard

ICS 01.040.45; 45.100

BSI
British Standards

National foreword

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The UK participation in its preparation was entrusted to Technical Committee MCE/20, Aerial ropeways, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

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English version

Safety requirements for cableway installations designed to carry persons - Terminology

Prescriptions de sécurité pour les installations à câbles transportant des personnes - Terminologie

Sicherheitsanforderungen für Seilbahnen und Schleppaufzüge des Personenverkehr - Begriffsbestimmungen

This European Standard was approved by CEN on 14 January 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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Foreword

This document (EN 1907:2005) has been prepared by Technical Committee CEN/TC 242 “Safety requirements for passenger transportation by rope”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

This document supersedes ENV 1907:1999.

This document forms part of the standards programme adopted by the CEN Technical Board (CEN/BT) in relation to safety requirements for cableway installations designed to carry persons.

This programme comprises the following standards*:*

— *1:* prEN 1907, *Safety requirements for cableway installations designed to carry persons - Terminology*

— *2:* EN 12929, *Safety requirements for cableway installations designed to carry persons - General requirements*

— *3:* EN 12930, *Safety requirements for cableway installations designed to carry persons - Calculations*

— *4:* EN 12927, *Safety requirements for passenger transportation by rope - Ropes*

— *5:* EN 1908, *Safety requirements for cableway installations designed to carry persons - Tensioning devices*

— *6:* EN 13223, *Safety requirements for cableway installations designed to carry persons – Drive systems and other mechanical equipment*

— *7:* prEN 13796, *Safety requirements for cableway installations designed to carry persons - Carriers*

— *8:* EN 13243, *Safety requirements for cableway installations designed to carry persons - Electrical equipment other than for drive systems*

— *9:* EN 13107, *Safety requirements for cableway installations designed to carry persons - Civil engineering works*

— *10:* EN 1709, *Safety requirements for cableway installations designed to carry persons – Precommissioning inspection, maintenance, operational inspection and checks.*

— *11:* EN 1909, *Safety requirements for cableway installations designed to carry persons - Recovery and evacuation*

— *12:* EN 12397, *Safety requirements for cableway installations designed to carry persons - Operation*

— *13:* EN 12408, *Safety requirements for cableway installations designed to carry persons - Quality assurance*

Together these form a series of standards regarding design, manufacture, erection, maintenance and operation of all installations for cableway installations designed to carry persons.

In respect of ski-tows, the drafting of this document has been guided by the works of the International Organisation for Transportation by Rope (OITAF).

Annex B of the document has been drawn up taking into account, in certain cases, the terms used in the ANSI standard B77-1:1990 "Aerial tramways and lifts - Surface lifts and tows - Safety requirements".

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This document defines general terms used in the safety requirements for cableway installations designed to carry persons.

The document concerns terms used in the design, manufacture, erection, maintenance and operation of the installations and is restricted to:

— those terms which form part of the vocabulary specific to these installations;

— those terms, whether scientific, technical or in every day use, which have a particular meaning in this field or which it appears necessary to define in greater detail.

The terms apply both to a particular installation and to their components.

Terms which are specific to standards which are listed in the foreword are defined in each of these standards.

This document does not apply to installations for the transportation of goods, nor to inclined lifts.

In the application of this document, the following definitions are applicable and have been given the reference numbers below.

2 General terms

Terms printed in **bold** type in the definitions are themselves defined in the text.

2.1
cableway installation designed to carry persons
installations made up of several **components**, designed, manufactured, assembled and put into service with the object of carrying persons. These on-site installations are used for the carriage of persons in **vehicles** or by **towing devices**, whereby the suspension and/or traction is provided by **ropes** positioned along the line of travel.

2.1.1
component
elementary part, group of parts, subassembly or complete unit incorporated in a **cableway installation**

NOTE Components may be mechanical in nature, or they may equally belong to the fields of civil engineering, electrical, pneumatic or hydraulic equipment, or automation and control.

2.1.1.1
safety component
any basic **component**, set of **components**, subassembly or complete assembly of equipment and any device incorporated in the installation for the purpose of ensuring a safety function and identified by the safety analysis, the **failure** of which endangers the safety or health of persons, be they users, operating personnel or third parties

3 Types of installations

3.1
aerial ropeway
cableway in which the **carriers** are suspended from one or several ropes

NOTE The term aerial ropeway, without further qualification, is generally applicable no matter how the ropes move or what functions they perform, how they are connected to the carriers and what type the carriers are.

3.1.1
reversible aerial ropeway; jigback
aerial ropeway whose **carriers** move backwards and forwards between the **ropeway stations**

NOTE These aerial ropeways are usually equipped with two closed carriers or groups of carriers with fixed grips.

3.1.2
uni-directional aerial ropeway
aerial ropeway whose **carriers** always travel in the same direction along their path

NOTE The carriers may be connected to the rope by fixed or detachable grips.

3.1.2.1
continuous movement aerial ropeway
uni-directional aerial ropeway whose **haulage rope(s)** or **carrying-hauling rope(s)** move(s) at constant speed

3.1.2.2
pulsed movement aerial ropeway
uni-directional aerial ropeway whose **haulage rope(s)** or **carrying-hauling rope(s)** move(s) either intermittently or at a speed which varies periodically as a function of the position of the **carriers**

NOTE The carriers or groups of carriers are usually connected to the rope by fixed grips.

3.1.3
monocable aerial ropeway
aerial ropeway in which the **carriers** are suspended from and hauled by a single rope

3.1.4
double-monocable aerial ropeway
term in current use for a **aerial ropeway** in which the **carriers** are both suspended from and hauled by two **rope loop**s or a single rope arranged in a double loop

3.1.5
bicable aerial ropeway
aerial ropeway in which the **carriers** are suspended from and hauled by separate ropes or groups of ropes

3.1.6
gondola lift
term in current use for a **uni-directional aerial ropeway** with several small **closed carriers**

3.1.7
bucket lift
uni-directional aerial ropeway in which the **carriers** are **buckets**

3.1.8
chairlift
uni-directional aerial ropeway in which the **carriers** are **chairs**

3.2
funicular railway
cableway in which the **carriers** are hauled by one or several ropes along a track which may lie on the ground or be supported by fixed structures

NOTE The carriers are generally supported on wheels which may be of different types, with the track designed accordingly.

3.3
ski-tow; draglift
cableway in which the passengers, either wearing skis or equipped with suitable special appliances, are towed along a prepared **track** by means of **tow-hangers** hauled by a rope

3.3.1
low level ski-tow
type of **ski-tow** in which the rope runs at such a height that the users can grip it directly or by means of short **tow-hangers**

NOTE A fibre rope may be used. The tow-hangers are usually handled with fixed or detachable grips. These ski-tows may be portable.

4 Ropes and end fixings

4.1
static rope; fixed rope
rope anchored at least at one of its ends and possibly resting on one or more intermediate supports

4.1.1
carrying rope; track rope
static rope arranged to support **carriers** by means of **carrier trucks** which move along the rope

4.1.2
tension rope
rope used for connecting the free end of a **static rope** or the **end sheave** of a **rope loop** to the counterweight or **tensioning device**

4.1.3
brake rope
static rope on which the **onboard brake** acts and which has no other function

4.1.4
signal cable
static cable used for the transmission of signals, such as control or video signals, or telephone communication

4.2
moving rope
rope arranged in such a way as to allow large longitudinal movements

NOTE Moving ropes are usually connected to one or more carriers, or are capable of being so connected.

4.2.1
carrying-hauling rope
moving rope arranged to transmit its motion to **carriers** attached to and at the same time supported by it

4.2.2
haulage rope; haul rope
moving rope arranged to transmit its motion to **carriers** attached to but not supported by it

4.2.2.1
counter rope
in a **funicular railway**, or a bicable **reversible aerial ropeway**, **moving rope** attached to the carriers by **end fixings**, without going through the driving **sheave**

NOTE "Câble-lest" may also be used in instead of "contre-câble" in French, or "ballast rope" instead of "counter rope" in English, when the drive station is at the upper end.

4.2.3
towing rope (for ski-tow); haul rope (for ski-tow)
moving rope arranged to transmit its motion to **tow-hangers** attached to it

4.2.4
rope loop
rope closed into a loop by a splice

4.2.5
recovery rope
moving rope whose sole function is to replace the installation **haul ropes** in the event of failure of the latter in order to ensure the return of the **carriers** to the **station**

4.2.6
evacuation rope
moving rope used only for moving evacuation carriers

4.3
end fixing; termination
component connecting one of the ends of a rope to the **component** on which the rope pulls

NOTE The end fixing may, for example, be the connection between a static rope and either an anchorage, a counterweight or a tensioning device, or it may be the connection between an interrupted moving rope and a carrier.

4.3.1
socket end fixing
end fixing formed by a socket within which the end part of the rope is immobilized under the applied tensile load

4.3.2
(haulage rope) fixing drum
end fixing consisting of a drum, around which a **haulage rope** is wrapped to form dead turns

4.3.3
anchor drum
end fixing consisting of a drum attached to an anchorage, around which a **static rope** is wrapped to form dead turns

4.3.4
bending ratio
ratio between either the pitch diameter of the **sheave** (D) and the nominal rope diameter (d) or the pitch radius of the shoe, saddle or **roller chain** (R) and the nominal rope diameter

4.3.5
twist
torsional couple induced in a rope under tension

4.4
double anchorage
condition in which both ends of a **static rope** are anchored

4.5
tensioning device
all the **component**s which are used for maintaining the tension of a rope within pre-established limits

4.6
nominal tension
the theoretical static force applied to the rope through the **tensioning device** by counterweights, or the mean value of the pre-established limits in the case of another **tensioning device**

4.7
transverse force factor
ratio between the tension at a point in the rope and the normal component of a force applied at that point

4.8
tensile safety factor (TSF)
ratio between the minimum breaking force (MBF) of the rope and the calculated tension force in the rope

5 Supports and guides for ropes and carriers

5.1
wheel; sheave
rotating support which imposes its own radius as the radius of curvature of the rope passing over it

5.1.1
deflection sheave
sheave whose purpose is to change the direction of a rope

5.1.1.2
return sheave
sheave at which the direction of the rope is reversed

NOTE In general, a return sheave is situated at the end of the line of cableway.

5.1.1.3
tension sheave
deflection sheave for a **tension rope**

5.1.2
cage (sheave or roller)
device intended to limit the movement of a **sheave** in the event of failure of the axle

5.1.3
derailment detector
device which enables the **derailment** of a **rope** to be detected

5.2
roller
rotating support whose radius is smaller than the radius of curvature of the rope at its point of contact

5.3
support sheave or roller
sheave or roller which normally exerts an upward force on the rope

5.4
compression sheave or roller
sheave or roller which normally exerts a downward force on the rope

5.5
roller battery
set of **rollers** and their supporting structure, with the **rollers** arranged one after the other so as to change the direction of a **moving rope**

5.6
support/compression roller battery
roller battery comprising both **support** and **compression rollers**

5.7
suspended haul rope support
on a **bicable aerial ropeway** with twin **carrying ropes**, device comprising a frame attached to the two **carrying ropes** and equipped with one or more **rollers**, intended to provide an intermediate **line support structure** for the **haul rope(s)**

5.8
derailment
condition in which a **rope**, a **carrier truck** or a **wheel** of a funicular **carriage** has left its normal position

5.8.1
derailment of rope; deropement
condition in which a rope has left its normal position on a support

5.8.2
derailment of carrier truck
condition in which a **carrier truck** in an **aerial ropeway** has left its normal position on the rope(s)

5.8.3
derailment of axles
condition in which the wheels of one or more axles of a **carriage** in a **funicular railway** have left their normal position on the track

5.9
guide
device designed to prevent damage resulting from contact between a **carrier** or a **tow-hanger** and any fixed structure

NOTE In certain cases, for example when entering, traversing or leaving a station, contact during operation between carriers or tow-hangers and guides is normal.

5.10
anti-derailleur
device designed to prevent a **derailment**

5.11
rope re-engagement device
device designed to replace a **moving rope** onto a rotating support from which it has derailed

5.12
rope-catcher
device designed to catch a derailed rope

5.13
clamp (track rope)
device enabling a **track rope** to be maintained on a saddle without preventing its longitudinal movement

5.14
roller chain
device whose purpose is to change the direction of a **track rope**, in which the rope rests on a series of links connected together to form a chain, which can move along its support thanks to **rollers**

5.15
catcher arm
device designed to catch a derailed rope which has derailed upwards and which is not held by its **rope-catcher**

6 Carriers, tow-hangers and their grips

6.1
carrier
component designed to carry passengers in an **aerial ropeway** or a **funicular railway**

NOTE In an aerial ropeway, a carrier comprises not only a chair or one or more cabins or buckets connected together but also all the components connecting the chair, cabins or buckets to the rope or ropes. In a funicular railway, the carriers consist of carriages which move along a track and which may be connected together to form a train.

6.1.1
closed carrier
carrier in which the passengers are protected from bad weather and cannot get out unaided during transport

6.1.1.1
cabin; gondola
component in a **closed carrier** designed to accommodate standing or seated passengers

6.1.1.2
carriage
carrier in a **funicular railway**

6.1.2
open carrier
a **carrier** which does not meet at least one condition for a **closed carrier**

6.1.2.1
chair
component of an **open carrier** designed to receive one or more seated passengers

6.1.2.1.1
covered chair
chair provided with a movable hood or cover intended to protect the passengers against bad weather

6.1.2.2
bucket
component of a **carrier** designed to receive one or more standing passengers

6.1.3
group of carriers
several **carriers** connected to the rope(s) next to each other, but not otherwise connected together

6.1.4
modular carrier
carrier consisting of several **cabins** or **buckets** connected one to another, each being connected independently to the rope(s)

6.1.5
self-powered carrier
carrier in an **aerial ropeway** with an onboard **drive system**

6.1.6
attended carrier; accompanied carrier
carrier in which an **attendant** is present

6.1.7
maintenance carrier
carrier used for the maintenance of the line and equipped for that purpose

6.1.8
onboard brake
brake installed on a **carrier** to stop it on the line

NOTE The two most common types of onboard brakes are the carrier truck brake and the track brake.

6.1.8.1
carrier truck brake
onboard brake which acts on the **track rope(s)** of a **bicable aerial ropeway**

6.1.8.2
track brake
in a **funicular, onboard brake** acting on the rails or on a continuous independent **component**

6.1.9
carrier truck
component of a **carrier** in an **aerial ropeway** consisting of a structure containing **rollers** which travel along one or more **carrying ropes** and supporting the rest of the **carrier**

6.1.10
suspension
component in a **carrier** in an **aerial ropeway** which connects a **cabin**, **chair** or **bucket** to a **grip** or a **carrier truck**

6.1.11
safety bar
device installed on a **chair**, to prevent passengers in transit from falling out and which is moved aside in the **stations** for loading and unloading

6.2
tow-hanger
component in a **ski-tow** consisting of a **grip** and a **component** designed to tow passengers

NOTE The tow-hanger may comprise a rod (which may be telescopic) together with a J-bar or a platter, or a **springbox** together with a T-bar or a J-bar or a platter. In the case of a **low-level ski-tow**, the tow-hanger may consist of a handle fastened to the rope.

6.2.1
platter
in a **tow-hanger**, disc-shaped **component** in direct contact with the passenger

6.2.2
T-bar
in a **tow-hanger**, **component** in direct contact with the users and having the form of an inverted T

NOTE A similar type of tow-hanger for one user, having the form of a J, is known as a J-bar.

6.2.3
rod
rigid **component** of a **tow-hanger** connected between the **platter** and the **grip**

NOTE A rod may be telescopic, particularly in order to reduce the shock loading when a user starts off, to allow for variations in the height of the snow and to return empty tow-hangers hanging freely from the rope.

6.2.4
springbox
component of a **tow-hanger** which enables the length of towing cord between the **grip** and the **T-bar**, or **platter** to adapt automatically to the towing conditions

NOTE This system principally reduces the loading shock when users start off, allows for variations in the height of the snow and enables empty T- bars, J-bars or platters to be returned hanging freely from the rope.

6.2.4.1
towing cord
component of a **tow-hanger** connecting a **T-bar** or **platter** to a **springbox**

6.3
grip
component in a **carrier** or a **tow-hanger** designed to be attached directly to a **rope loop**

NOTE A grip may be fixed or detachable and usually takes the form of a clamp which grips the cable under the action of springs or the weight of the carrier, a bush wedged eccentrically on the rope, a bolted clamp, or a friction stop (chapeau-de-gendarme).

6.3.1
clamp
fixed or **detachable grip** comprising two jaws which encircles the rope and presses against it with sufficient force to prevent slipping

6.3.1.1
fixed grip
grip which remains fixed in position on the **rope** during **operation**

6.3.1.2
detachable grip
grip which is detached from the rope when it is within the **stations**

6.3.2
chapeau de gendarme
fixed grip consisting of several sectors arranged in chicane form between which the rope is held by friction when under tension

6.3.3
attachment (of a grip)
attachment of a **detachable grip** to the **moving rope**

6.3.4
detachment (of a grip)
detachment of a **detachable grip** from the **moving rope**

7 Stations, line structures and tow-tracks

7.1
station
unit comprising buildings and structures containing technical equipment, **loading or unloading areas** or **platforms**, and any associated areas for reception and shelter

7.1.1
loading/unloading area
area specially prepared to allow passengers to mount or dismount

7.1.2
loading/unloading platform
platform specially prepared to allow passengers to mount or dismount

7.1.3
loading band
device installed at the **loading area** intended to reduce the relative speed of the **carriers** and passengers, so as to facilitate loading

7.1.4
carrier acceleration device
device installed in the **stations** of **continuous movement aerial ropeways** intended to accelerate the **carriers** to the speed required for **attachment**

NOTE The term also applies to similar devices with which certain funicular railways may be equipped.

7.1.5
carrier deceleration device
device installed in the **stations** of **continuous movement aerial ropeways** intended to slow down **carriers** arriving in the **station** after **detachment**

NOTE The term also applies to similar devices with which certain funicular railways may be equipped.

7.1.6
position indicator
device which shows to the staff the position of the **carriers** on the line by means of symbols

7.1.7
position monitor
device which provides information on the position of the **carriers** on the line and which may be used for automatic control or for monitoring the **operation** of the installation

NOTE This information may in addition be displayed visually by a position indicator.

7.2
line structure
any fixed structure between the **stations** forming part of the **cableway**

7.2.1
line support structure
line structure supporting the ropes or keeping them in position

7.3
tow-track
specially prepared track along which passengers wearing skis or equipped with suitable special appliances are towed

7.4
height above ground
the distance between the surface of the floor of **closed carriers** or the seat surface of **open carriers** and the surface of the ground (without taking into account any covering of snow)

7.5
work platform
platform from which **maintenance** is carried out

8 Drive systems and brakes

8.1
drive (and braking) system
system of energy supplies, prime movers, transmission units and control, safety and braking devices required to operate the **cableway** in specified conditions

8.1.1
main drive
drive system intended for ensuring normal **operation**

8.1.2
auxiliary drive
drive system other than the **main drive** which permits **operation** by replacing the latter, possibly at reduced capacity, but with the same level of safety as in normal **operation**

8.1.3
recovery drive
drive system intended exclusively for the **recovery** of the **carriers** in the event of unavailability of the other **drives**

8.1.4
evacuation drive
drive system for an evacuation system or any other means of **evacuation**

8.2
service brake
mechanical brake located in the drive **station**, used principally to stop the installation in **normal operating conditions** and to keep it stationary

8.3
safety brake
brake whose purpose is to stop the installation in the case of failure of the other braking devices and to keep it stationary

8.4
stop
bringing the installation to a standstill

8.4.1
emergency stop
the rapid stopping of the installation in the event of possible danger to passengers, personnel, third parties or the installation

8.4.2
stopping distance (of the installation)
distance covered by the **carrier(s)** from the time that the **stop** of the installation is initiated until it comes to a standstill

8.5
emergency stop device
manually or automatically operated switchgear acting on a safety circuit or line safety circuit and initiating the stopping of the cableway

NOTE According to this definition, switches on line support structures, profile gauge switches and tension weight switches, for example, are also emergency stop devices, as are also maintenance switches and emergency stop buttons

8.5.1
maintenance switch safety switch
manually operated and lockable **emergency stop device** which initiates stopping of the cableway and prevents restart by means of a brake acting on the drive sheave

8.5.2
emergency stop button
manually operated **emergency stop device** which does not return automatically to its initial position after operation and can be reset manually

9 Recovery and evacuation

9.1
recovery
operation to return the **carriers** and their passengers to the **stations** using special procedures and the installation's own resources

NOTE The installation's own resources may include the main drive system used under predetermined conditions or an auxiliary drive system, with the special procedures being chosen depending on the reasons for abandoning normal operation.

9.2
evacuation; rescue
set of procedures used, if the installation is immobilized, to return passengers to a place of safety

9.3
evacuation plan
document containing all the provisions relating to the human and material resources and to the procedures to be implemented for the **evacuation** of the passengers

9.4
operation centre
position from which the **evacuation** operations are directed

10 Operating and inspection

10.1
operation
action consisting in transporting passengers by means of installations built for this purpose

10.1.1
controller
natural or legal person having overall legal, economic and technical responsibility for the **operation**

10.1.2
attendant; conductor
employee present in a **carrier** having particular duties during transport

10.1.3
operator
employee present at a particular installation, responsible for monitoring its condition and ensuring its **operation**

10.2
inspection
ensemble of operations intended to establish and assess the actual condition of an installation and its **components**

10.2.1
functional test
test of the function of a **component** or of the combined action of several **components**

10.2.2
non-destructive test
test which does not lead to any deterioration likely to jeopardize the subsequent use of the **component** being tested

10.2.3
visual inspection
non-destructive test of the state of a **component** by visual means only, possibly taking into account particular circumstances

10.3
maintenance
ensemble of operations necessary for maintaining and restoring the installation and its **components** to the specified condition and for establishing and assessing their actual condition

10.4
servicing
ensemble of operations intended to maintain the specified condition of an installation and its **components**

10.5
repair
operations intended to re-establish the specified condition of an installation and its **components**

10.6
service run
run in which no passengers are carried

NOTE The transport of personnel and materials is permissible.

10.7
operating speed
speed of the **moving rope**, measured at the drive **sheave**. In the case of a **self powered carrier**, the speed of the **carrier** on the **rope**

10.8
operating rules
document established by the **controller**, and if necessary approved by the competent authority, setting out the actions to be taken by the personnel to ensure the safety and smooth running of the **operation**

10.9
supervision point
point from which the **operation** of the installation can be supervised. The **supervision point** may be located remotely from the site of the installation

10.10
control point
point from which the **cableway** can be controlled and stopped

NOTE The type and extent of operating and indicating devices at the control point vary depending on the type of **cableway** and the position of the control point.

10.11
control console
control point situated in the control room in the drive **station**, from which the **cableway** can be controlled and stopped and all its modes of **operation** can be monitored

10.12
bridging
suppression under pre-established conditions of the safety functions operational during normal **operation**, when in **operation** in exceptional circumstances

10.13
test run
a **service run** during which tests are carried out

10.14
normal operating conditions
the operating conditions are considered as normal when all the following conditions are fulfilled:

— the installation is in working order and the necessary personnel are at their posts;

— the weather, visibility and other external conditions do not require any special precautions to be taken;

— the comfort of the passengers is not impaired;

— the **main drive** is in use.

11 Miscellaneous

11.1
pitch
on unidirectional installations, the distance between two successive **carriers, group of carriers** or **tow-hangers**

11.2
interval
on unidirectional installations, the time between two successive **carriers, group of carriers** or **tow-hangers**

11.3
cadencing
on installations with **detachable grips**, the action of spacing **carriers** at regular intervals

11.4
fail-safe action (of a **component)**
a **component** is said to have **fail-safe action** if it is operated by a permanent force which cannot be reduced significantly by any fault

NOTE A component actuated by gravity or by the force of a compressed stack of spring washers may meet this definition if its design excludes any possibility of an opposing force other than that applied to the component to maintain its initial state. This is not generally the case for components actuated by electric current or by pressure from a hydropneumatic accumulator.

11.5
runback
unintentional reversal of the direction of movement of an installation

11.6
competent person
person having a sufficiently deep technical knowledge and/or experience or practical knowledge of a subject

NOTE According to the subject, recognition of competence may subject to certain conditions.

11.7
harm
physical injury and/or damage to health

11.8
hazard
a potential source of **harm**

11.9
risk
combination of the probable rate of occurrence of a **hazard** causing **harm** and the degree of severity of the **harm**

11.10
hazardous situation
any situation in which a person is exposed to a **hazard** or to **hazards**

11.11
hazard scenario
any event which directly gives rise to a **hazardous situation**

Annex A
(normative)

Equivalent terms in English, French and German languages

Number	English	French	German
6.1.6	accompanied carrier	véhicule accompagné	begleitetes Fahrzeug
3.1	aerial ropeway	téléphérique	Seilschwebebahn; Luftseilbahn
4.3.3	anchor drum	tambour d'ancrage	Verankerungspoller
5.10	anti-derailleur	antidérailleur	Entgleisungsschutz
6.3.3	attachment (of a grip)	couplage (d'une attache)	Einkuppeln
10.1.2	attendant	cabinier	Fahrzeugbegleiter; Wagenbegleiter; Kabinenbegleiter; Kabinenschaffner
6.1.6	attended carrier	véhicule accompagné	begleitetes Fahrzeug
8.1.2	auxiliary drive	entraînement auxiliaire	Ersatzantrieb; Hilfsantrieb
4.2.2.1	ballast rope	contre-câble	Gegenseil
4.3.4	bending ratio	rapport d´enroulement	Krümmungsverhältnis
3.1.4	bicable aerial ropeway	téléphérique bicâble	Zweiseilbahn
4.1.3	brake rope	câble frein	Bremsseil
10.11	bridging	pontage	Überbrückung
6.1.2.2	bucket	benne	Stehkorb; Stehgehänge
3.1.7	bucket lift	télébenne	Stehkorbbahn
6.1.1.1	cabin	cabine	Kabine
2.1	cableway installations designed to carry persons	installations à câbles transportant des personnes; remontée mécanique	Seilbahnen für den Personenverkehr
11.3	cadencing	cadencement	Abstandgebung
5.1.2	cage (sheave or roller)	encagement (de poulie)	Seilscheibenfangvorrichtung
6.1.1.2	carriage	voiture	Wagen
6.1	carrier	véhicule	Fahrzeug
7.1.4	carrier acceleration device	dispositif d'accélération des véhicules	Farhzeugbeschleunigunger
7.1.5	carrier deceleration device	dispositif de décélération des véhicules	Farhreugverzögerer
6.1.9	carrier truck	chariot	Laufwerk
6.1.8.1	carrier truck brake	frein de chariot	Tragseilbremse
4.1.1	carrying rope	câble porteur	Tragseil
4.2.1	carrying-hauling rope	câble porteur-tracteur	Förderseil für Seilschwebebahnen
5.15	catcher arm	bras de rattrapage	Fangarm

Number	English	French	German
6.1.2.1	chair	siège	Sessel
3.1.7	chairlift	télésiège	Sesselbahn
6.3.2	chapeau de gendarme	chapeau de gendarme	Chapeau-de-Gendarme
6.3.4	clamp	pince	Klemme
5.13	clamp (track rope)	étau (de câble porteur)	Tragseilhalterung
6.1.1	closed carrier	véhicule fermé	geschlossenes Fahrzeug
11.6	competent person	personne compétente	kompetente Person
2.1.1	component	constituant	Bauteil
5.4	compression sheave or roller	poulie/galet de compression	Niederhalterolle/Niederhaltscheibe
10.1.2	conductor	cabinier	Fahrzeugbegleite; Wagenbegleiter; Kabinenbegleiter; Kabinenschaffner;
3.1.2.1	continuous movement aerial ropeway	téléphérique à mouvement continu	kontinuierliche Umlaufbahn
10. 11	control console	poste de commande	Kommandostand
10.10	control point	poste de conduite	Steuerstelle
10.1.1	controller	exploitant	Betreiber
4.2.2.1	counter rope	contre-câble	Gegenseil
6.1.2.1.1	covered chair	siège capoté	Haubensessel
5.1.1	deflection sheave	poulie de déviation	Ablenkscheibe
5.8	derailment	déraillement	Entgleisung
5.1.3	derailment detector	détecteur de déraillement	Entgleisungsüberwachung
5.8.3	derailment of axles	déraillement d'essieux	Entgleisung von Fahrgestellen
5.8.2	derailment of carrier truck	déraillement de chariot	Laufwerksentgleisung
5.8.1	derailment of rope	déraillement de câble	Seilentgleisung
5.8.1	deropement	déraillement de câble	Seilentgleisung
6.3.1.2	detachable grip	attache découpable	betrieblich lösbare Klemme; kuppelbarre Klemme
6.3.4	detachment (of a grip)	découplage (d'une attache)	Auskuppeln
4.4	double anchorage	double ancrage	Doppelverankerung
3.1.4	double monocable aerial ropeway	téléphérique double monocâble	Doppel-Einseilbahn
3.3	draglift	téléski	Schleppaufzug; Schlepplift
8.1	drive (and braking) system	entraînement	Antrieb (einschließlich Bremsen)
8.4.1	emergency stop	arrêt d´urgence	Nothalt
8.5.2	emergency stop button	bouton d´arrêt d´urgence	Nothalttaster
8.5	emergency stop device	dispositif d´arrêt d´urgence	Nothaltevorrichtung

Number	English	French	German
4.3	end fixing; termination	attache d'extrémité	Seilendbefestigung
9.2	evacuation	évacuation	Bergung
8.1.4	evacuation drive	entraînement d´évacuation	Bergeantrieb
9.3	evacuation plan	plan d´évacuation	Bergeplan
4.2.6	evacuation rope	câble d'évacuation	Bergeseil
11.4	fail-safe action (of a component)	action positive (d'un constituant)	selbsttätige Wirkung (eines Systems)
6.3.1.1	fixed grip	attache fixe	feste Klemme
4.1	fixed rope	câble dormant	ruhendes Seil; stehendes Seil
4.2.2	fixing drum (haulage rope)	tambour d'attache	Seilpoller
3.2	funicular railway	funiculaire	Standseilbahn
10.2.1	functional test	essai fonctionnel	funktionnelle Prüfung
6.1.1.1	gondola	cabine	Kabine
3.1.6	gondola lift	télécabine	Kabinenbahn
6.3	grip	attache	Befestigung am Seil
6.1.3	group of carriers	groupe de véhicules	Fahrzeuggruppe
5.9	guide	guidage	Führung; Fahrzeugführung; Gehängeführung
11.7	harm	dommage	Schaden
4.2.2	haul rope	câble tracteur	Zugseil
4.2.3	haul rope (for ski-tow)	câble de remorquage	Förderseil für Schlepplift
4.2.2	haulage rope	câble tracteur	Zugseil
11.8	hazard	danger	Gefährdung
11.12	hazard scenario	facteur de danger	Gefährdungsbild
11.10	hazardous situation	situation dangereuse	Gefährdungssituation
7.4	height above ground	hauteur de survol	Bodenabstand
10.2	inspection	inspection	Prüfung
11.2	interval	intervalle	Folgezeit
3.1.1	jigback	téléphérique à va et vient	Pendelbahn
7.2	line structure	ouvrage de ligne	Streckenbauwerk
7.2.1	line support structure	support de ligne; pylône	Stütze
7.1.3	loading band	tapis d'embarquement	Fahrgastförderband
7.1.1	loading/unloading area	aire d'embarquement ou de débarquement	Einsteigebereich; Austeigebereich; Einstieg; Ausstieg
7.1.2	loading/unloading platform	quai d'embarquement et/ou de débarquement	Bahnsteig
3.3.1	low level ski-tow	téléski à câbles bas; fil neige	Schleppaufzug mit niederer Seilführung

Number	English	French	German
8.1.1	main drive	entraînement principal	Haupantrieb
10.3	maintenance	maintenance	Instandhaltung
6.1.7	maintenance carrier	véhicule de maintenance	Instandhaltungsfahrzeug
8.5.1	maintenance switch	interrupteur de maintenance; interrupteur de sécurité	Instandhaltungsschalter; Sicherheitsschalter
6.1.4	modular carrier	véhicule modulaire	Fahrzeug in Modulbauweise; Modulfahrzeug
3.1.3	monocable aerial ropeway	téléphérique monocâble	Einseilbahn
4.2	moving rope	câble mobile	bewegtes Seil; laufendes Seil
4.6	nominal tension	tension nominale	Grundspannkraft
10.2.2	non-destructive test	contrôle non destructif	zerstörungsfreie Prüfung
10.14	normal operating condition	conditions normales d´exploitation	normale Betriebsbedingungen
6.1.8	onboard brake	frein embarqué	Schienenbremse; Fangbremse
6.1.2	open carrier	véhicule ouvert	offenes Fahrzeug
10.8	operating rules	règlement d´exploitation	Betriebsvorschrift
10.7	operating speed	vitesse de marche	Fahrgeschwindigkeit
10.1	operation	exploitation	Betrieb
9.4	operation centre	poste de commandement	Leitstelle
10.1.3	operator	conducteur	Maschinist
11.1	pitch	espacement	Abstand (Fahrzeug-Schleppvorrichtung)
6.2.1	platter	sellette	Schleppteller
7.1.6	position indicator	indicateur de position	Fahrzeugstandanzeiger
7.1.7	position monitor	répétiteur de marche	Kopierwerk
3.1.2.2	pulsed movement aerial ropeway	téléphérique pulsé	Gruppenumlaufbahn; pulsierende Umlaufbahn
9.1	recovery	récupération	Räumung; Rückführung; Leerfahren
8.1.3	recovery drive	entraînement de secours	Notantrieb
4.2.5	recovery rope	câble de récupération	Abschleppseil
10.5	repair	dépannage	Instandsetzung
9.2	rescue	évacuation	Bergung
5.1.1.2	return sheave	poulie de renvoi	Umlenkscheibe
3.1.1	reversible aerial ropeway	téléphérique à va et vient	Pendelbahn
11.10	risk	risque	Risiko
6.2.3	rod	perche	Schleppstange
5.2	roller	galet	Seilrolle

Number	English	French	German
5.5	roller battery	train de galets	Rollenbatterie
5.14	roller chain	chaîne à galets	Rollenkette
5.12	rope catcher	rattrape-câble	Seilfänger; Seilfangvorrichtung
4.3.2	(haulage rope) fixing drum	tambour d´attache (de câble tracteur)	Zugseiltrommel
4.2.4.	rope loop	câble en boucle	Seilschleife (geschlossene)
5.11	rope re-engagement device	citre	Seileinweiser
11.6	runback	dévirage	Rücklauf
6.1.11	safety bar	garde-corps	Schließbügel
8.3	safety brake	frein de secours, frein de sécurité	Sicherheitsbremse
2.1.1.1	safety component	constituant de sécurité	Sicherheitsbauteil
6.1.5	self-powered carrier	véhicule automoteur	selbstfahrendes Fahrzeug
8.1.4	service brake	frein de service	Betriebsbremse
10.6	service run	course de service	Dienstfahrt
10.4	servicing	entretien	Wartung
5.1	wheel, sheave	poulie	Seilscheibe
4.1.4	signal cable	câble de signalisation	Steuerseil;; Telefonseil; Schalterseil
3.3	ski-tow	téléski	Schlepplift
4.3.1	socket end fixing	tête de câble	Seilkopf
6.2.4	springbox	enrouleur	Einziehvorrichtung
4.1	static rope	câble dormant	ruhendes Seil; stehendes Seil
7.1	station	station	Station
8.4	stop	arrêt	Halt
8.4.2	stopping distance (of an installation)	distance d'arrêt (de l'installation)	Anhalteweg
10.9	supervision point	poste de surveillance	Überwachungsstelle
5.6	support/compression roller battery	train de galets support-compression	Wechsellastbatterie
5.3	support sheave or roller	poulie/galet de support	Tragrolle/Tragscheibe
5.7	suspended haul rope support	cavalier	Seilreiter; Zugseilzwischenaufhängung
6.1.10	suspension	suspente	Gehänge
6.2.2	T-bar	archet	Schleppbügel
4.8	tensile safety factor (TSF)	coefficient de sécurité á la traction (TSF)	Zugsicherheitsfaktor (TSF)
4.1.2	tension rope	câble de tension	Spannseil

Number	English	French	German
5.1.1.3	tension sheave	poulie de tension	Spannseilscheibe
4.5	tensioning device	dispositif de mise en tension	Spanneinrichtung
4.3	termination	attache d'extrémité	Seilendbefestigung
10.13	test run	course de contrôle	Prüffahrt
6.2	tow-hanger	agrès	Schleppvorrichtung
7.3	tow-track	piste de montée	Schleppspur
6.2.4.1	towing cord	cablette (cordelette d'enrouleur)	Schleppseil (einer Einziehvorrichtung)
4.2.3	towing rope (for ski-tow),	câble de remorquage	Förderseil für Schlepplifte
6.1.8.2	track brake	frein de voie	Schienenbremse
4.1.1	track rope	câble porteur	Tragseil
4.7	transverse force factor	coefficient de force transversale	Querkraftverhältnis
4.3.5	twist	vrillage	Seildrall
3.1.2	uni-directional aerial ropeway	téléphérique à mouvement unidirectionnel	Umlaufbahn
7.5	work platform	passerelle de travail	Arbeitspodest
10.2.3	visual inspection	contrôle visuel	Sichtprüfung; visuelle Prüfung

Annex B
(informative)

Equivalent terms in English (UK) and English (US)

N°	English (UK)	REF. B 77	English (US)
8.1.2	auxiliary drive	2.1.2.1.1	standby drive
6.1.1.1	cabin	1.4.12	gondola
2.1	cableway installations designed to carry persons	1.4.4	passenger tramway
5.1.2	cage	-	sheave retainer
6.1.9	carrier truck	2.1.4.4.1	track cable truck
6.1.8.1	carrier truck brake	2.1.4.3.2	track cable brake; carriage brake
4.1.1	carrying rope	1.4.8	track cable
4.2.1	carrying-hauling rope	1.4.5.1	haul rope
6.1.1	closed carrier	1.4.12	enclosed carrier
5.4	compression sheave or roller	3.1.1.4.5	depression sheave or rolle ; hold-down sheave or roller
10.1.1	controller	2.3.2.1.2	operator
5.1.1	deflection sheave	1.4.9.1	haul rope sheave
5.8.1	derailment of rope	3.1.3.2.2	deropement
4.4	double anchorage	-	rope anchoring on both ends
3.3	draglift	1.4.4.3	surface lift
4.3	end fixing; termination	7.3.2	end connection
4.2.6	evacuation rope	-	evacuation haul rope
4.2.2	haulage rope	1.4.9.1	haul rope
7.2.1	line support structure		tower
7.1.3	loading band	-	loading carpet
3.3.1	low-level ski tow	1.4.4.4	tow
6.1.8	onboard brake	-	carriage brake
10.1	operation	-	management
11.1	pitch	-	carrier spacing
8.1.3	recovery drive	2.1.2.1.1	auxiliary drive
4.2.5	recovery rope	-	auxiliary haul rope
9.2	rescue	2.3.2.5.6	evacuation
3.1.1	reversible aerial ropeway	1.4.4.1	reversible aerial tramway
6.2.3	rod	5	stem

N°	English (UK)	REF. B 77	English (US)
5.5	roller battery	1.4.9.2	roller assembly; sheave assembly
5.12	rope-catcher	2.1.3.3.2	rope catching device
3.3.1	rope-tow	1.4.4.4	tow
11.5	runback	3.1.2.5.3	rollback
6.1.11	safety bar	4.1.4.4.4	restraining device
3.3	ski-tow	1.4.4.3	surface lift
4.3.1	socket end fixing	7.3.2.4	socket
5.6	support-compression roller battery	-	support-compression sheave assembly
5.7	suspended haul rope support	-	intermediate haul rope support
7.3	tow-track	5.1.1.2.1	ski track
6.2	tow-hanger	1.4.4.3	towing outfit
6.2.4.1	towing cord	-	towing rope
4.2.5	towing rope	5	haul rope
4.1.1	track rope	1.4.8	track cable
3.1.2	uni-directional aerial ropeway	1.4.4.2	aerial lift

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