SCHEDULE 2 Regulation 2(5)

(ANNEX II TO THE CABLEWAY INSTALLATIONS DIRECTIVE)

# ESSENTIAL REQUIREMENTS

## Purpose

**1.** This Annex sets out the essential requirements, including maintainability and operability, applicable to the design, construction and entry into service of installations referred to in Article 1(5) of this Directive.

## General requirements

**2**

**2.1.** Safety of persons

The safety of users, workers and third parties is a fundamental requirement for the design, construction and operation of installations.

**2.2.** Principles of safety

All installations must be designed, operated and serviced in accordance with the following principles, which are to be applied in the order given:

— eliminate or, if that is not possible, reduce risks by means of design and construction features,

— define and implement all necessary measures to protect against risks which cannot be eliminated by the design and construction features,

— define and state the precautions which should be taken to avoid the risks which it has not been possible to eliminate completely by means of the provisions and measures referred to in the first and second indents.

**2.3.** Consideration of external factors

Installations must be so designed and constructed as to make it possible to operate them safely, taking into account the type of installation, the nature and physical features of the terrain on which it is installed, its surroundings and atmospheric and meteorological factors, as well as possible structures and obstacles located in the vicinity either on the ground or in the air.

**2.4.** Dimensions

The installation, the subsystems and all its safety components must be dimensioned, designed and constructed to withstand, with a sufficient degree of safety, all stresses encountered under all foreseeable conditions, including those which occur when not in operation, and taking account in particular of outside influences, dynamic effects and fatigue phenomena, while complying with the acknowledged rules of the art, in particular with regard to the choice of materials.

**2.5.** Assembly

**2.5.1.** The installation, the subsystems and all the safety components must be designed and constructed in such a way as to ensure that they can be safely assembled and put into place.

**2.5.2.** The safety components must be so designed as to make assembly mistakes impossible, either as a result of construction or by means of appropriate markings on the components themselves.

**2.6.** Integrity of the installation

**2.6.1.** The safety components must be designed and constructed and be usable in such a way as to ensure that, in every case, their own operational integrity and/or the safety of the installation is

ensured, as defined in the safety analysis in Annex III, so that their failure is highly improbable and with an adequate safety margin.

**2.6.2.** The installation must be designed and constructed in such a way as to ensure that, during its operation, any failure of a component which might affect safety, even indirectly, is met by an appropriate measure being taken in good time.

**2.6.3.** The safeguards referred to in points 2.6.1 and 2.6.2 must apply throughout the period between two scheduled inspections of the component concerned. The time period for the scheduled inspection of the safety components must be clearly indicated in the instruction manual.

**2.6.4.** Safety components which are incorporated into installations as spare parts must satisfy the essential requirements of this Directive and the conditions relating to the smooth interaction with the other parts of the installations.

**2.6.5.** Measures must be taken to ensure that the effects of a fire in the installation do not endanger the safety of persons being transported and workers.

**2.6.6.** Special measures must be taken to protect installations and persons from the effects of lightning.

**2.7.** Safety devices

**2.7.1.** Any defect in the installation which could result in a failure endangering safety must, where practicable, be detected, reported and processed by a safety device. The same applies to any normally foreseeable external event which may endanger safety.

**2.7.2.** It must be possible at all times to shut down the installation manually.

**2.7.3.** After the installation has been shut down by a safety device, it must not be possible to restart it unless appropriate action has been taken.

**2.8.** Maintainability

The installation must be designed and constructed so as to enable routine or special maintenance and repair operations and procedures to be carried out safely.

**2.9.** Nuisance

The installation must be designed and constructed in such a way as to ensure that any internal or external nuisance resulting from noxious gases, noise emissions or vibrations falls within the prescribed limits.

**Infrastructure requirements**

**3**

**3.1.** Layout, speed, distance between vehicles

**3.1.1.** The installation must be designed to operate safely taking into account the characteristics of the terrain and its surroundings, atmospheric and meteorological conditions, any possible structures and obstacles located in the vicinity either on the ground or in the air in such a way as to cause no nuisance or pose no danger under any operational or servicing conditions or in the event of an operation to rescue persons.

**3.1.2.** Sufficient distance must be maintained laterally and vertically between vehicles, towing devices, tracks, cables, etc., and possible structures and obstacles located in the vicinity either on the ground or in the air, taking account of the vertical, longitudinal and lateral movement of the cables and vehicles or of the towing devices under the most adverse foreseeable operating conditions.

**3.1.3.** The maximum distance between vehicles and ground must take account of the nature of the installation, the type of vehicles and the rescue procedures. In the case of open cars it must also take account of the risk of fall as well as the psychological aspects associated with the distance between vehicles and ground.

**3.1.4.** The maximum speed of the vehicles or towing devices, the minimum distance between them and their acceleration and braking performance must be chosen to ensure the safety of persons and the safe operation of the installation.

**3.2.** Stations and structures along the line

**3.2.1.** Stations and structures along the line must be designed, installed and equipped so as to ensure stability. They shall permit safe guidance of the cables, vehicles and the towing devices, and enable maintenance to be safely carried out, under all operating conditions.

**3.2.2.** The entry and exit areas of the installation must be designed so as to guarantee the safety of the traffic of vehicles, towing devices and persons. The movement of vehicles and towing devices in the stations must be capable of taking place without risk to persons, taking into account their possible active collaboration to their movement.

**4.** Requirements relating to cables, drives and brakes and to mechanical and electrical installations

**4.1.** Cables and their supports

**4.1.1.** All measures must be taken in line with the latest technological developments:

— to avoid cables or their attachments breaking,

— to cover their minimum and maximum stress values,

— to ensure that they are safely mounted on their supports and prevent derailment,

— to enable them to be monitored.

**4.1.2.** It is not possible to prevent all risk of cable derailment, measures must be taken to ensure that cables can be retrieved and the installations shut down without risk to persons in the event of derailment.

**4.2.** Mechanical installations

**4.2.1.** Drives

The drive system of an installation must be of a suitable performance and capability, adapted to the various operating systems and modes.

**4.2.2.** Standby drive

The installation must have a standby drive with an energy supply which is independent of that of the main drive system. A standby drive is not, however, necessary if the safety analysis shows that people can leave the vehicles and, in particular, towing devices easily, quickly and safely even if a standby drive is not available.

**4.2.3.** Braking

**4.2.3.1.** In an emergency, it must be possible to shut down the installation and/or the vehicles at any moment, under the most unfavourable conditions in terms of authorised load and pulley adhesion during operation. The stopping distance must be as short as the security of the installation dictates.

**4.2.3.2.** Deceleration values must be within adequate limits fixed in such a way to ensure both the safety of the persons and the satisfactory behaviour of the vehicles, cables and other parts of the installation.

**4.2.3.3.** In all installations there must be two or more braking systems, each capable of bringing the installation to a halt, and co-ordinated in such a way that they automatically replace the active system when its efficiency becomes inadequate. The traction cable's last braking system must act directly on the driving pulley. These provisions do not apply to drag lifts.

**4.2.3.4.** The installation must be fitted with an effective clamp and locking mechanism to guard against premature restarts.

**4.3.** Control devices

The control devices must be designed and constructed so as to be safe and reliable, to withstand normal operating stresses and external factors such as humidity, extreme temperatures or electromagnetic interference and so as not to cause dangerous situations, even in the event of operational error.

**4.4.** Communication devices

Suitable facilities must be provided to enable operational staff to communicate with one another at all times and to inform users in case of emergency.

**Vehicles and towing devices**

**5**

**5.1.** Vehicles and/or towing devices must be designed and fitted out in such a way that under foreseeable operating conditions no person can fall out or encounter any other risks.

**5.2.** The fittings of vehicles and towing devices must be dimensioned and constructed so as not to:

— damage the cable, or

— slip, except where slippage does not significantly affect the safety of the vehicle, the towing device or the installation

under the most unfavourable conditions.

**5.3.** Vehicle doors (on cars, cabins) must be designed and constructed in such a way as to make it possible to close and lock them. The vehicle floor and walls must be designed and constructed so as to withstand pressure and loads exerted by users under any circumstances.

**5.4.** If for reasons of operational safety an operator is required on board the vehicle, the vehicle must be fitted with the equipment required for him to carry out his tasks.

**5.5.** Vehicles and/or towing devices and, in particular, their suspension mechanisms must be designed and fitted so as to ensure the safety of workers servicing them in accordance with appropriate rules and instructions.

**5.6.** In the case of vehicles equipped with disconnectable fittings, all measures must be taken to bring to a halt, without risk to users, at the moment of departure, any vehicle whose fitting has been incorrectly connected to the cable and, at the moment of arrival, any vehicle whose fitting has not been disconnected, and to prevent the vehicle from falling.

**5.7.** Funicular vehicles and, in so far as the configuration of the installation so permits, bi-cable cable cars must be equipped with an automatic braking device on the track, when the possibility of carrier cable breaking cannot reasonably be excluded.

**5.8.** Where all risk of derailment of the vehicle cannot be eliminated by other measures, the vehicle must be fitted with an anti-derailment device which enables the vehicle to be brought to a halt without risk to persons.

**Equipment for users**

**6.** The access to embarkation areas and exit from disembarkation areas and the embarkation and disembarkation of users must be organised with regard to the movement and stopping of vehicles in such a way as to ensure the safety of persons, in particular in areas where there is a risk of falling.

It must be possible for children and persons with reduced mobility to use the installation safely if the installation is designed for the transport of such persons.

**Operability**

**7**

**7.1.** Safety

**7.1.1.** All technical provisions and measures must be taken to ensure that the installation is used for its intended purpose according to its technical specification and to the specified operating conditions and that the instructions on safe operation and maintenance can be complied with. The instruction manual and the corresponding notes shall be drawn up in an official language or languages of the Community which may be determined in accordance with the Treaty by the Member State in the territory of which the installation is constructed.

**7.1.2.** The persons responsible for operating the installation must be provided with the appropriate material resources and must be qualified to carry out the task in hand.

**7.2.** Safety in the event of immobilisation of the installation

All technical provisions and measures must be adopted to ensure that users can be brought to safety within a set time appropriate to the type of installation and its surroundings when the installation is immobilised and cannot be restarted quickly.

**7.3.** Other special provisions concerning safety

**7.3.1.** Operators' stands and workplaces

Movable parts which are normally accessible in the stations must be designed, constructed and installed in such a way as to preclude any risks or, where such risks exist, be fitted with protective devices so as to prevent any contact with parts of the installation which may cause accidents. These devices must be of a type that cannot easily be removed or rendered inoperative.

**7.3.2.** Risk of falling

Workplaces and working areas, including those used only occasionally, and the access to them, must be designed and constructed in such a way as to prevent persons required to work or move in them from falling. Should the construction not be adequate, they must also be provided with anchorage points for personal protective equipment to prevent falls.