



SLOVENSKI STANDARD

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Specifikacije za nosila in drugo opremo za ravnanje s pacienti v reševalnih vozilih

Specifications for stretchers and other patient handling equipment used in road ambulances

Festlegungen für Krankentragen und andere Krankentransportmittel im Krankenkraftwagen

Spécifications des brancards et équipements d'ambulances pour le transport des patients

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ICS:

11.160	Prva pomoč	First aid
43.160	Vozila za posebne namene	Special purpose vehicles

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1865

September 1999

ICS 11.140; 11.160; 43.160

English version

Specifications for stretchers and other patient handling equipment used in road ambulances

Spécifications des brancards et équipements d'ambulances
pour le transport des patients

Festlegungen für Krankentragen und andere
Krankentransportmittel im Krankenkraftwagen

This European Standard was approved by CEN on 8 August 1999.

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.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 239 "Rescue systems", the secretariat of which is held by DIN.

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 March 2000, and conflicting national standards shall be withdrawn at the latest by March 2000.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

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

Introduction

This European Standard with the general title "Specifications for stretchers and other patient handling equipment used in road ambulances" incorporates specifications for:

- Main stretcher – undercarriage
- Chair stretcher
- Transfer mattress
- Carrying sheet
- Pick up stretcher
- Vacuum mattress and pump
- Long spinal board
- Foldable carrying chair
- Non-foldable carrying chair

This European Standard is closely related to prEN 1789 "Medical vehicles and their equipment - Road ambulances".

NOTE: Standardisation work will continue with the aim of ensuring the safe transfer of patients and equipment without compromising continuity of patient care and the safety of staff.

1 Scope

This European Standard defines minimum requirements for the design and performance of stretchers and other patients handling equipment used in road ambulances for handling and carrying a patient in such a way that supplementary injuries due to handling are reduced to a minimum.

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 292-2

Safety of machinery - Basic concepts, general principles for design – Part 2: Technical principles and specifications

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EN 597-1

Furniture – Assessment of the ignitability of mattresses and upholstered bed bases – Part 1: Ignition source: Smouldering cigarette

EN 980

Graphical symbols for use in the labelling of medical devices

EN 1021-1

Furniture - Assessment of the ignitability of upholstered furniture – Part 1: Ignition source: Smouldering cigarette (ISO 8191-1 : 1987, modified)

EN 1041

Information supplied by the manufacturer with medical devices

prEN 1789 : 1999
Medical vehicles and their equipment – Road ambulances

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 Main stretcher

The main means for the conveyance of sick and/or injured persons in transit in a recumbent position in safety and in comfort whilst facilitating treatment.

3.2 Chair stretcher

A device designed to handle and carry a patient in a sitting or lying position, including conveying a patient in the vehicle.

3.3 Transfer mattress

A device intended to facilitate the transfer of the patient from one stretcher to another.

3.4 Carrying sheet

A special sheet to handle and carry a patient in a lying or sitting position.

3.5 Pick up stretcher

A lifting device, intended to be used for movement of seriously injured people on to other transport devices.

3.6 Vacuum mattress

A device intended primarily to provide whole body immobilization during the transportation of the patient.

3.7 Long spinal board

A device to lift and immobilize patients with spinal injuries.

3.8 Foldable carrying chair

A device intended to handle and carry a patient in a sitting position to the road ambulance but not to be used to transport a patient within the ambulance.

3.9 Non-foldable carrying chair

A device intended to handle and carry a patient in a sitting position to the road ambulance and to be used to transport a patient within the ambulance.

4 Requirements iTeh STANDARD PREVIEW

All equipment for handling of patients shall guarantee a safe and smooth manipulation.

All equipment for handling of patients shall be secured so that any movement during ambulance transport is prevented, even in bad transport conditions.

Carrying handles of devices for handling of patients shall permit fixation in extended positions.

All equipment for handling of patients shall be free of any sharp edges or deformation that could cause damage to persons or other equipment on board.

For all patients transported in the patients compartment, patient restraint-systems shall be available.

All patient restraint-systems shall have a quick release system.

The patient restraint-system for all patient handling equipment shall immobilize the patient, but at the same time shall permit treatment of the patient.

The lying-sitting part shall be made of a strong material which is bacterial resistant, fungal resistant, stain resistant, putrid resistant, easy to clean, washable, waterproof and petrol-oil resistant.

4.1 Main stretcher

4.1.1 General

The main stretcher shall consist of a stretcher part that can be used alone or in combination with an integrated or separable undercarriage.

It shall be designed to provide that the full weight of the patient and the carried stretcher part will only be lifted/carried by the personnel for the minimum period of time.

It shall be designed to provide that during loading and unloading the maximum burden on any personnel is half of the total weight of patient and stretcher and for the minimum possible time and in an optimal ergonomic position so that back bending is minimized.

4.1.2 Dimensions

Dimensions shall be measured from the outermost edges.

Stretcher part:	length:	$(1950 \pm \begin{smallmatrix} 20 \\ 50 \end{smallmatrix})$ mm
	width:	(550 ± 20) mm
	height:	maximum 300 mm from loading holding assembly to unloaded lying part. This height dimension does not apply to stretchers with monoblock undercarriages. If a monoblock is not available, the stretcher must be constructed such that it is detachable from the undercarriage.

Undercarriage: length and width of the frame of the undercarriage in car position shall not exceed length and width of the stretcher part.

4.1.3 Mass

The mass excluding mattress and patient restraints shall be not more than

Stretcher part:	23 kg
Undercarriage:	28 kg
Stretcher part with integrated undercarriage:	monoblock 45 kg

NOTE: In all cases the mass should be as low as possible.

4.1.4 Loading capacity

The loading capacity shall be a minimum of 150 kg.

4.1.5 Frame

The frame shall be in sturdy lightweight non twisting construction enabling use of cardiopulmonary resuscitation. All corners of the frame shall be radiused for greater safety.

It shall be possible to lock and secure the stretcher and undercarriage against lateral, longitudinal, vertical and oblique movements.

All mechanisms shall be constructed to prevent damage to the user and the patient.

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4.1.5.1 Stretcher parts

- If swing down siderails are mounted, they shall have a minimum length of 500 mm and a height between 150 mm and 200 mm.
- If longitudinal handles are incorporated they shall be fitted to the ends of the longitudinal frame such that they lock and do not twist when they are stowed or in use. They shall be designed to minimize the risk of injuries to the hands and wrists when the stretcher is carried at angles. It shall allow the fixation and use of a carrying harness and yoke.
- There shall be a facility to attach a support for infusion.
- The longitudinal bars shall be connected together such that torsion is avoided.

- e) The stretcher shall have either a water and scratch resistant paint finish or be manufactured of corrosion resistant material. Both versions shall be unaffected by disinfectants.
- f) If intended to be used without undercarriage there shall be 4 wheels with a minimum diameter of 100 mm suitably placed to ensure stability.
- g) If intended to be used with undercarriage the stretcher shall be able to be fixed to the undercarriage without using supplementary means. A safe handling and lowering of the undercarriage shall be ensured.
- h) The fixed stretcher shall be easy to release from the stretcher tray or the undercarriage.

4.1.5.2 Undercarriage

- a) The undercarriage shall be fitted with 4 wheels with a diameter of at least 100 mm. There shall be a minimum of two 360 degrees swivel wheels at the foot end and at least two wheels shall be fitted with a footbrake.
- b) The undercarriage shall be suitable for a road ambulance loading and unloading height of maximum 750 mm.
- c) The undercarriage shall have a simple mechanism for height adjustment and shall have a minimum of two levels (car position and fully unfolded).
- d) The supporting mechanism shall automatically stay in place when fully unfolded.
- e) The operating controls shall be designed in accordance with the body dimensions, physical strength and anatomical and physiological requirements of human beings. The operating controls shall be clearly and permanently labelled, preferably with graphical symbols, indicating their positions and settings. If the controls can initiate movements which could be dangerous to persons, they shall be secured against unintentional operation.
- f) All the functions of the stretcher shall remain completely unimpaired when it is connected to the undercarriage.
- g) The undercarriage shall either be provided with a waterproof and scratch resistant finish or be made of corrosive resistant material or similar surface.
- h) If the undercarriage is used with a separable stretcher it shall be possible both to connect the undercarriage to the stretcher and to separate them easily. The mounting for the stretcher shall be secured in such a manner that unintentional separation of undercarriage and stretcher cannot occur. It shall be possible to load and unload the undercarriage and stretcher so as to ensure the safety and comfort of the patient and the operators.

4.1.6 Lying part of the stretcher

- a) The lying area shall be flat over the complete surface and shall be made of sturdy lightweight construction. The thorax area shall be manufactured of sturdy lightweight material which allows cardiopulmonary resuscitation without acting as a spring or giving way. The materials shall be unaffected by disinfectants.
- b) The lying area shall be non-slip and shall be covered with a transfer mattress, or a mattress that shall provide for patient comfort and also be firm enough to enable cardiopulmonary resuscitation to be undertaken. The mattress shall be able to conform to the various treatment configuration provided by the stretcher.
- c) The lying area shall have an adjustable head-end/backrest with a minimum length of 600 mm. It shall be possible to turn up the backrest at least 75 degrees and there shall be at least five fixing positions within this range. It shall be possible to maintain the angle of adjustment under all normal cases of loading and unloading.
- d) The lying area shall have an adjustable footrest with a minimum length of 900 mm. It shall be possible to turn up the footrest at least 15 degrees. It shall be possible to maintain the angle of adjustment under all normal cases of loading and unloading.

4.1.7 Restraint system

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The stretcher shall have a minimum of two quick-release patients restraints.

4.1.8 Flammability – toxicity burning gases

There shall be no progressive smouldering or flaming ignition when tested in accordance with EN 1021-1.

4.1.9 Deformation of the frame

The frame shall not bend or break when tested in accordance with 5.1.1.

4.1.10 Fixation

The requirement of the fixation shall be in accordance with 4.5.9 of prEN 1789 : 1999. There shall be no deformation of the fixation when tested in accordance with 5.1.2.

4.1.11 Deformation of the lying area

There shall be no deformation of the lying area when tested in accordance with 5.1.3.

4.1.12 Resistance to torsion

There shall be no remaining deformation to torsion when tested in accordance with 5.1.4.

4.1.13 Splaying of the wheels

The wheels shall not splay more than 2 mm in total during the test specified in 5.1.5 and there shall be no permanent deformation.

4.2 Chair stretcher¹⁾

4.2.1 Dimensions

The dimensions of the chair stretcher shall be as follows:

Length: (1900 ± 50) mm

Width: (550 ± 30) mm

4.2.2 Mass

The mass shall be not more than 23 kg.

NOTE: The mass should be as low as possible.

4.2.3 Loading capacity

The loading capacity shall be a minimum of 150 kg.

4.2.4 Frame

The frame of the chair stretcher shall be made of a sturdy lightweight construction and shall be able to be locked in the chair-position. The chair stretcher shall have at least two rear wheels.

4.2.5 Lying-sitting part

The lying-sitting part shall be made of a strong material which is bacterial resistant, fungal resistant, stain resistant, putrid resistant, easy to clean, washable, waterproof and petrol-oil resistant.

4.2.6 Restraint system

There shall be at least two quick release patient restraints.

4.2.7 Flammability – toxicity burning gases

There shall be no progressive smouldering or flaming ignition when tested in accordance with EN 1021-1.

4.2.8 Deformation of the frame

The frame of the chair stretcher shall not open spontaneously or bend when tested in accordance with 5.2.1.

4.2.9 Fixation

Not applicable.

¹⁾ If the chair stretcher is a structural part of the main stretcher, the requirements of 4.1 apply.

4.2.10 Deformation of the lying-sitting area

There shall be no remaining deformation of the lying-sitting area when tested in accordance with 5.2.2.

4.2.11 Resistance to torsion

There shall be no remaining deformation to torsion when tested in accordance with 5.2.3.

4.2.12 Splaying of the wheels

The wheels shall not splay more than 2 mm in total during the test specified in 5.2.4 and there shall be no permanent deformation.

4.3 Transfer mattress

4.3.1 Dimensions

The dimensions of the transfer mattress of the lying area shall be as follows:

Length:	(1950 \pm $\frac{20}{50}$) mm
Width:	maximum 500 mm
Height:	maximum 100 mm

4.3.2 Mass

The mass shall be not more than 10 kg.

NOTE: The mass should be as low as possible.

4.3.3 Loading capacity

The loading capacity shall be a minimum of 150 kg.

4.3.4 Handles

The transfer mattress shall be equipped with at least 4 handles on each longitudinal side, the handles shall be designed to give a comfortable and safe grip.

4.3.5 Lying part

Both sides of the transfer mattress shall have a different function: one side shall provide a lying comfort equivalent to a foam filling of minimum 40 mm with density 30 to 40 kg/m³, the other side shall provide the mattress with sufficient rigidity to transfer the patient with at least 2 persons, one at each longitudinal side.

The mattress shall be capable of being adopted to the form of the lying part of the stretcher.

The lying part shall be constructed in such a way that prevents the ingress of fluids. The material shall be easy to clean, washable, petrol-oil resistant and allow preliminary x-ray diagnostics. It shall withstand temperatures ranging from + 70 °C to - 30 °C.

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4.3.6 Restraint system

Not applicable.

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4.3.7 Flammability – toxicity burning gases

There shall be no progressive smouldering or flaming ignition when tested in accordance with EN 1021-1.

4.3.8 Deformation

There shall be no remaining deformation of the mattress when tested in accordance with 5.3.1.

4.3.9 Fixation

Not applicable.

4.3.10 Deformation of the lying area

There shall be no remaining deformation of the lying area when tested in accordance with 5.3.2.

4.3.11 Resistance to torsion

Not applicable.

4.3.12 Splaying of the wheels

Not applicable.

4.4 Carrying sheet

4.4.1 Dimensions

The dimensions of the carrying sheet shall be as follows:

Length:	minimum	1850 mm
Width:	minimum	570 mm

4.4.2 Mass

The mass shall be not more than 5 kg.

NOTE: The mass should be as low as possible.

4.4.3 Loading capacity

The loading capacity shall be a minimum of 150 kg.

4.4.4 Handles

The carrying sheet shall be equipped with at least 3 handles on each longitudinal side.

4.4.5 Lying part

The lying part of the carrying sheet shall be made of a strong material which is bacterial resistant, fungal resistant, washable, disinfectable, putrid resistant, waterproof, petrol-oil resistant and allow preliminary x-ray diagnostics.

4.4.6 Restraint system

Not applicable.

4.4.7 Flammability – toxicity burning gases

There shall be no progressive smouldering or flaming ignition when tested in accordance with EN 1021-1.

4.4.8 Deformation of the handles

There shall be no remaining deformation of the handles when tested in accordance with 5.4.1.

4.4.9 Fixation

Not applicable.

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4.4.10 Deformation of the lying area

There shall be no remaining deformation of the lying area when tested in accordance with 5.4.2.

4.4.11 Resistance to torsion

Not applicable.