DIN EN 1789:2024-07 (E)

Medical vehicles and their equipment - Road ambulances (includes Amendment:2023)

Contents

Page

European foreword ... 4

Introduction ... 5

1 Scope ... 6

2 Normative references ... 6

3 Terms and definitions ... 9

4 Requirements ... 10
4.1 General requirements ... 10
4.2 Electrical requirements ... 10
4.2.1 General ... 10
4.2.2 Electromagnetic compatibility (EMC) ... 11
4.2.3 Battery and alternator ... 11
4.2.4 Electrical installation ... 12
4.2.5 Visual warning system and audible warning system (siren) ... 13
4.2.6 Reversing systems ... 13
4.2.7 Exterior illumination lights ... 13
4.3 Vehicle body ... 14
4.3.1 Fire safety ... 14
4.3.2 Driver's seat configuration ... 14
4.3.3 Minimum passenger capacity ... 14
4.3.4 Bulkhead ... 15
4.3.5 Openings (doors, windows, emergency exits) ... 15
4.3.6 Loading area ... 16
4.4 Patient's compartment ... 18
4.4.1 General ... 18
4.4.2 Safety ... 18
4.4.3 Hygiene ... 18
4.4.4 Patient's compartment dimensions ... 19
4.4.5 Patient and crew seating ... 24
4.4.6 Ventilation and anaesthetic gas scavenging systems ... 25
4.4.7 Temperature control system ... 25
4.4.8 Interior lighting ... 26
4.4.9 Interior noise level ... 26
4.4.10 Holding system for infusion ... 26
4.4.11 Retention, fixation and restraint systems ... 27
4.4.12 Mass reserve ... 27

5 Testing ... 27
5.1 General ... 27
5.2 Testing of the interior noise level ... 27
5.2.1 Specific measurement conditions ... 27
5.2.2 Measurements ... 28
5.3 Testing of retention systems and fixation of the equipment in the patient's compartment ... 28
5.3.1 General ... 28
5.3.2 Testing of the stretcher fixation on the vehicle floor ... 30

5.3.3 Testing of the medical devices fixation 30
5.3.4 Testing of furniture 30
5.3.5 Test procedure 31
5.4 Testing of rounded edges and radius inside the patient's compartment 32
5.4.1 Testing of rounded edges 32
5.4.2 Testing of radius inside the patient's compartment 33
5.5 Procedure to verify the patient's compartment specifications 33
5.6 Procedure to verify the loading area specifications 33
5.6.1 General 33
5.6.2 Procedure to verify the loading angle of 16° 33
5.7 Procedure to verify the dimensions of the patient's compartment 35
5.7.1 Type A and B road ambulances 35
5.7.2 Type C road ambulances 35
5.8 Procedure to verify the seats dimensions of the patient's compartment 36
5.9 Testing of the ventilation system 36
5.10 Testing of the heating system 37
5.11 Testing of the cooling system 37
5.11.1 Test procedure 37
5.11.2 Testing of independent air conditioning system 38
5.12 Testing of interior lighting 38
5.13 Testing of infusion holding system 38

6 Equipment and medical devices 39
6.1 Provision of medical devices 39
6.2 Medical devices storage 39
6.3 Requirements for medical devices 39
6.3.1 General 39
6.3.2 Temperature 39
6.3.3 Humidity and ingress of liquids 39
6.3.4 Mechanical strength 39
6.3.5 Fixation of devices 40
6.3.6 Electrical safety 40
6.3.7 User interface 40
6.3.8 Gas installation 40
6.3.9 Marking and instructions 42
6.3.10 Maintenance 42
6.4 List of equipment 42

Annex A (informative) Test summary 52

Annex B (informative) Recognition 53

B.1 Recognition and visibility of ambulances 53

B.2 Recognition of crew 53

Annex C (informative) Hygiene 54

Annex D (informative) A–deviations 55

D.1 Deviation in Spain 55

〈A1〉 Annex E (normative) Electric propelled vehicles 56

Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 93/42/EEC [OJ L 169] aimed to be covered 57

Bibliography 58